

T H E P O R T S A N D T R A D E

O F T H E

R E D S E A B A S I N

VOLUME II

FIGURES AND PHOTOGRAPHS .

M. M. ASFOUR, B.A.

SUBMITTED FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY OF
THE UNIVERSITY OF DURHAM, 1963

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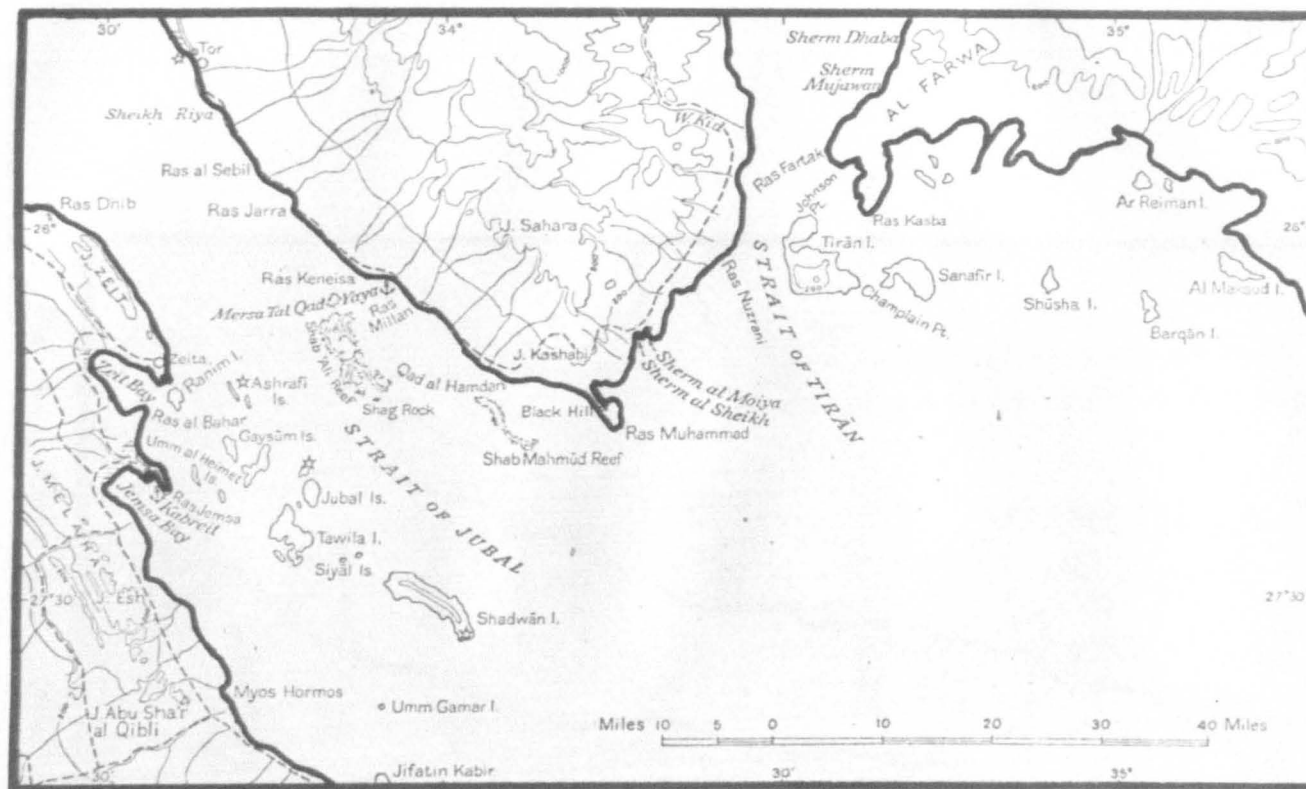


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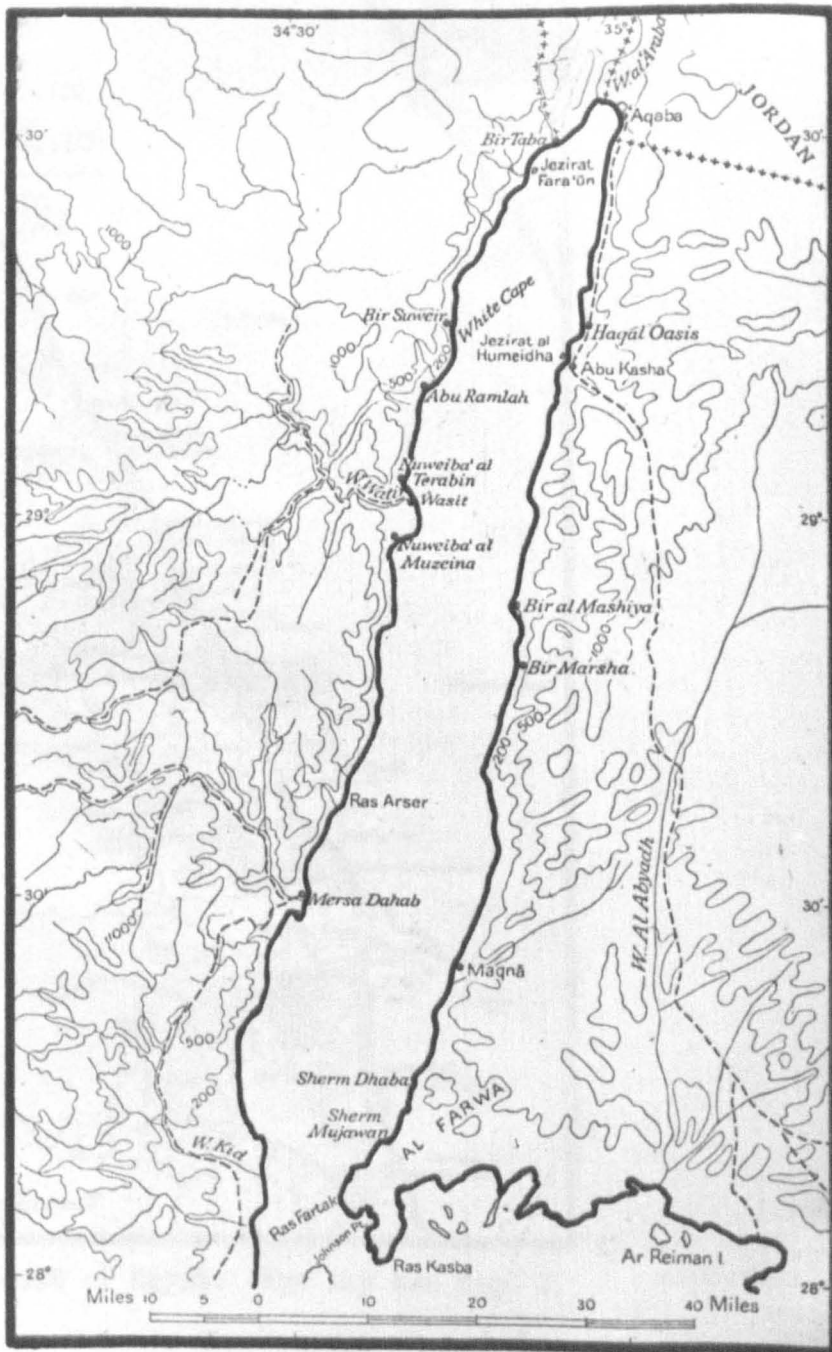


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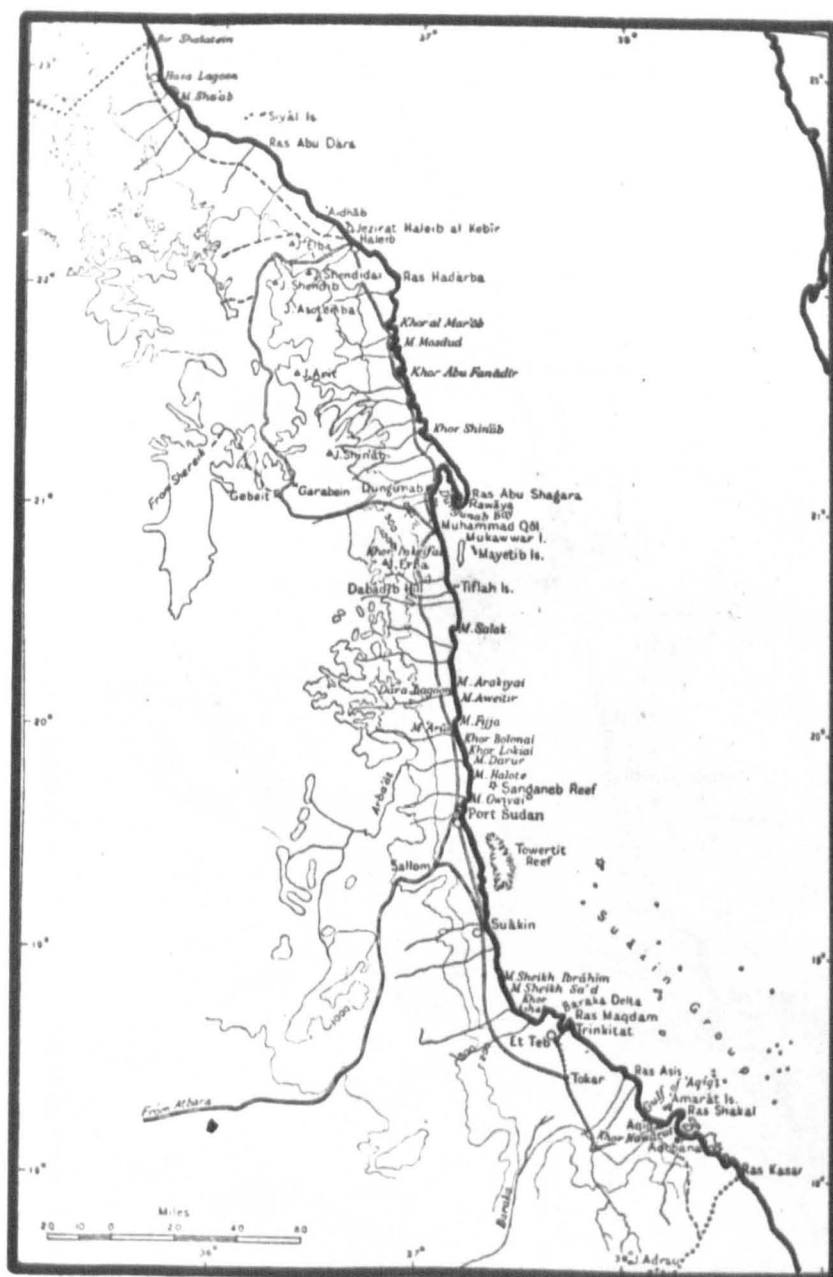


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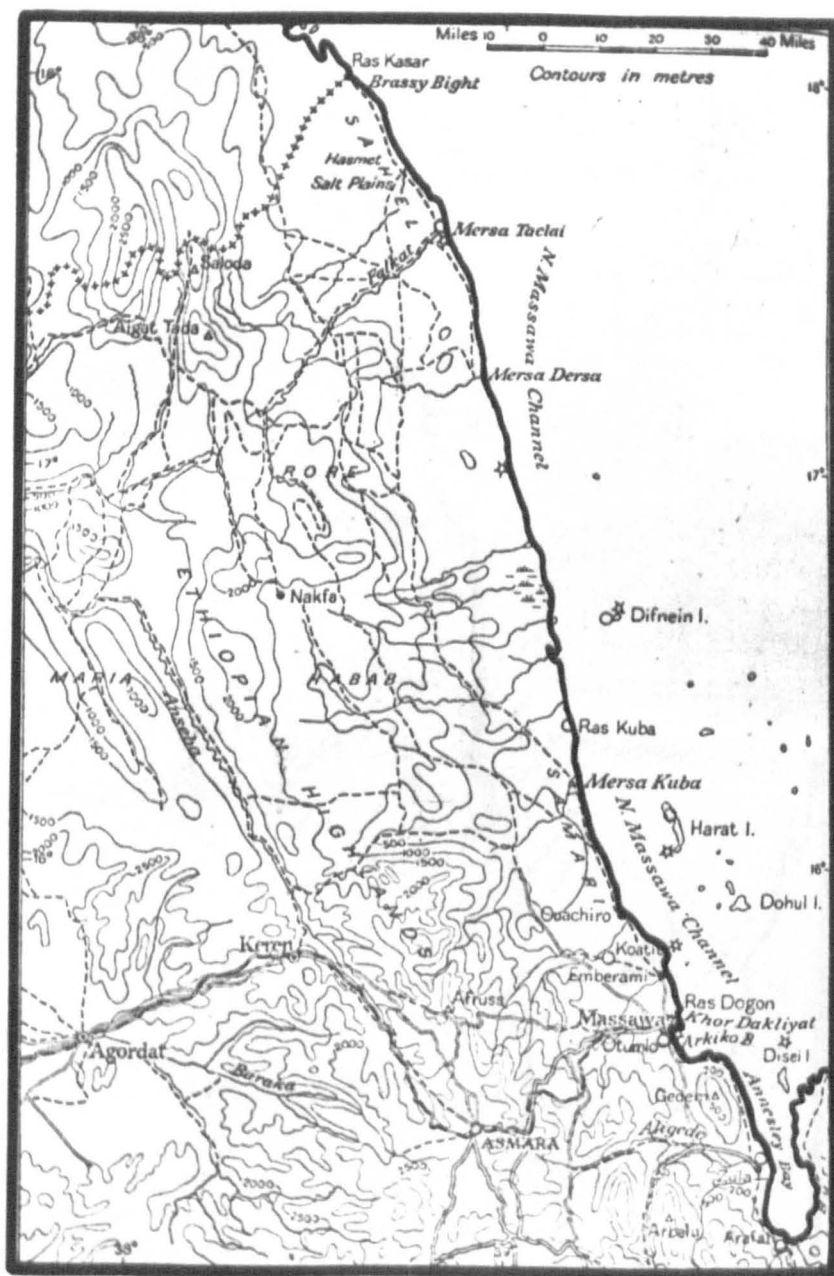


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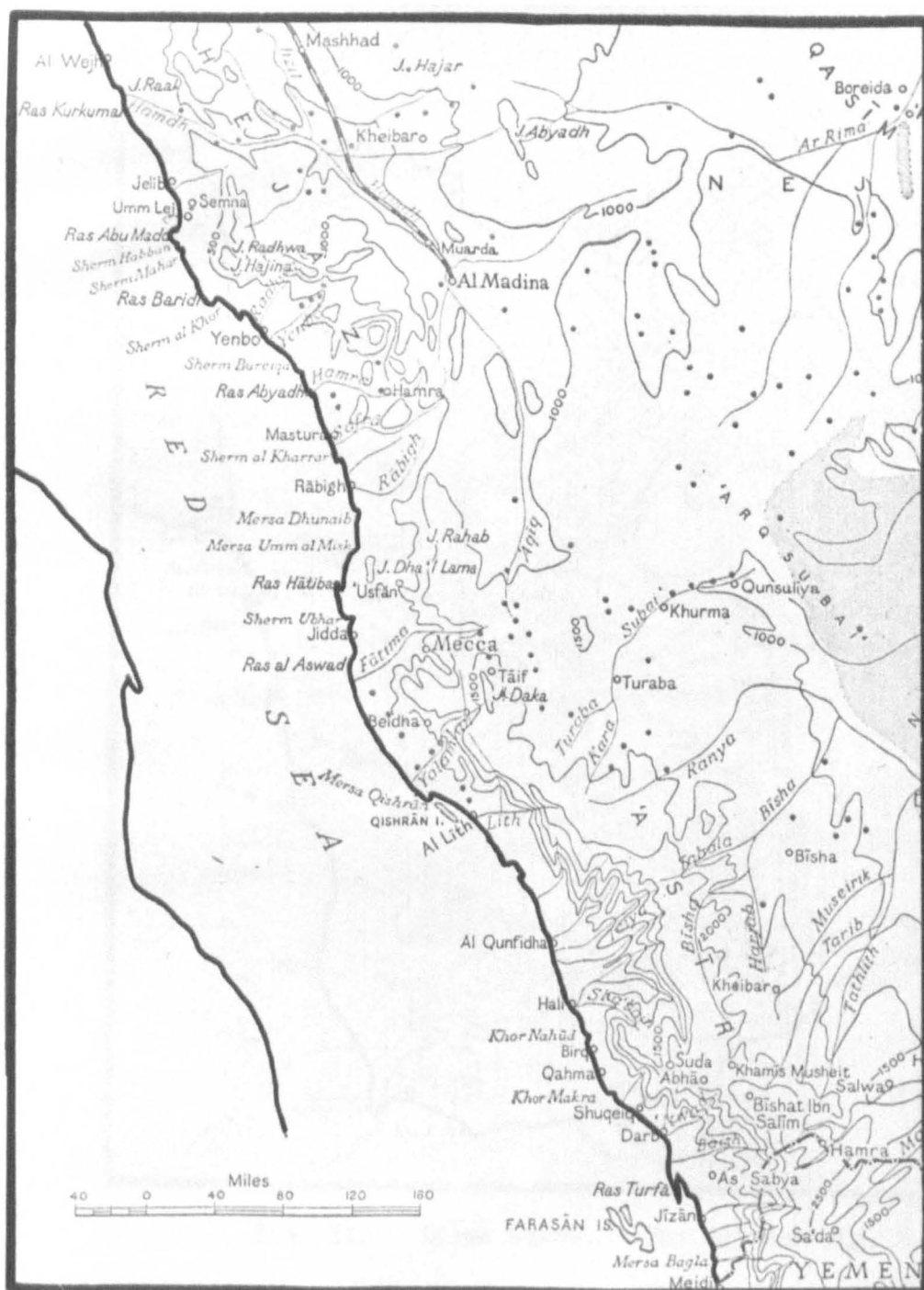


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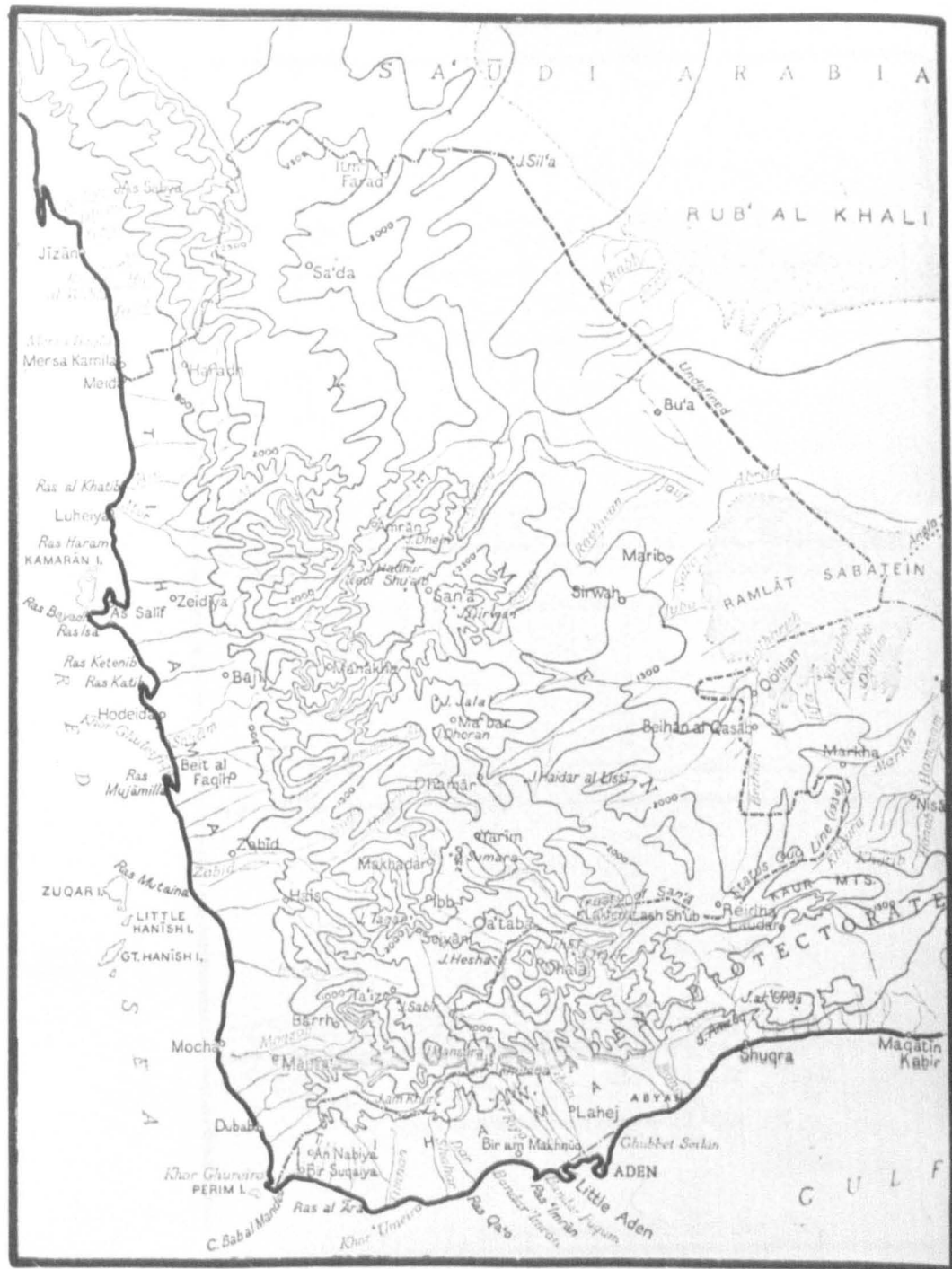
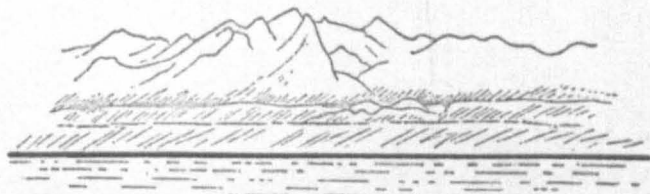


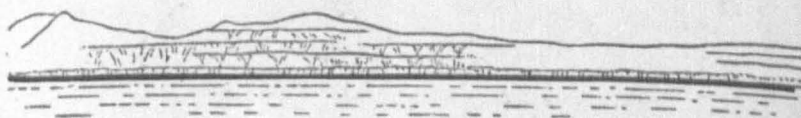
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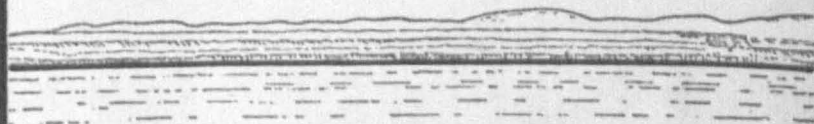
(a) *The Sinai coast south of Tor*



(b) *The African coast south of Ras Dhib*



(c) *Shadwān Island*

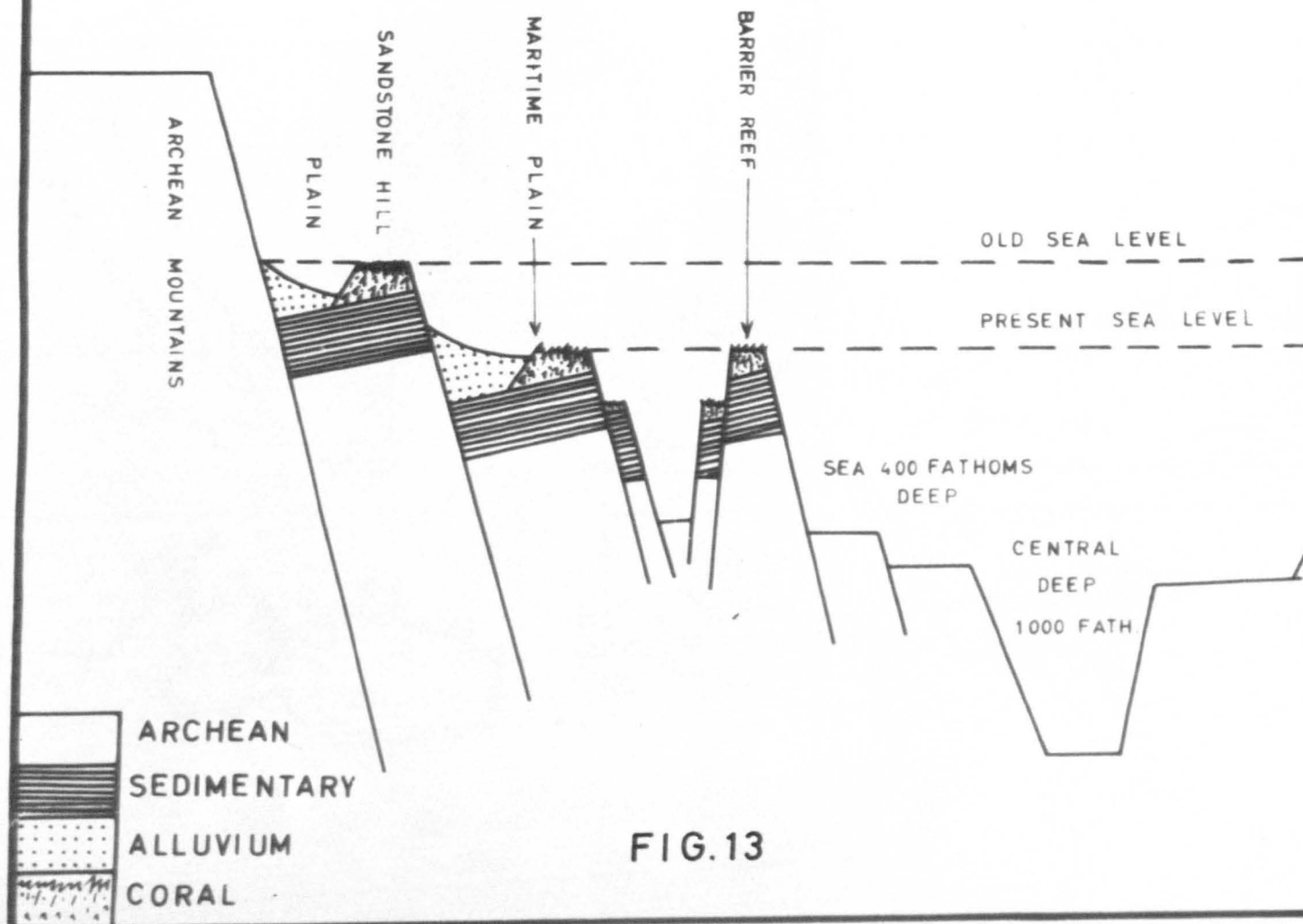


(d) *The Arabian coast north of Al Wejh*

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THREE STEPS ON SIDE OF RED SEA

RIFT VALLEY



THE NATURAL HARBOURS OF THE RED SEA

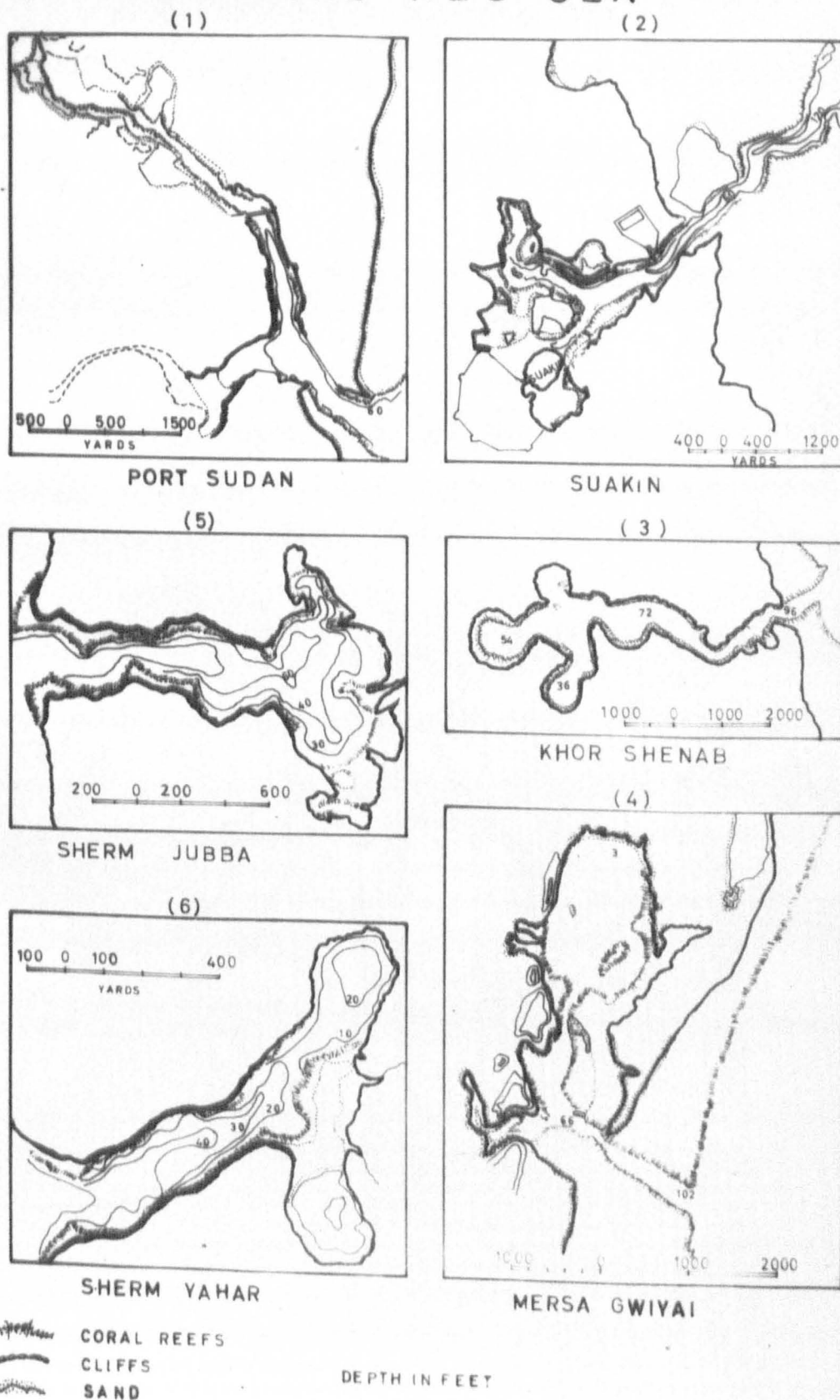
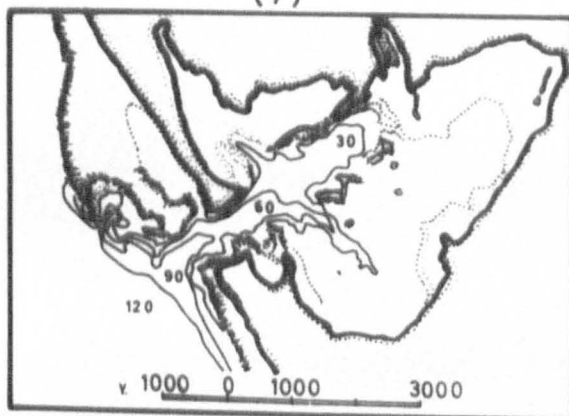


FIG.14

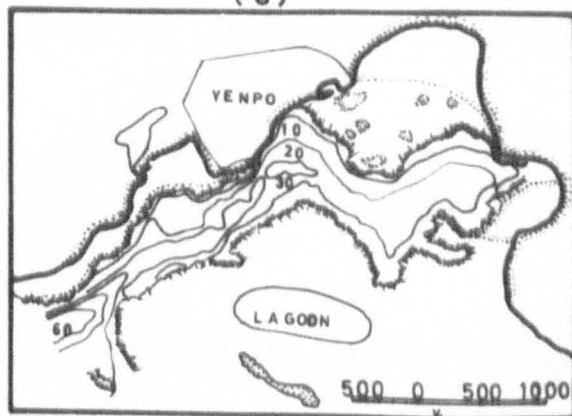
THE NATURAL HARBOURS OF THE RED SEA

(7)



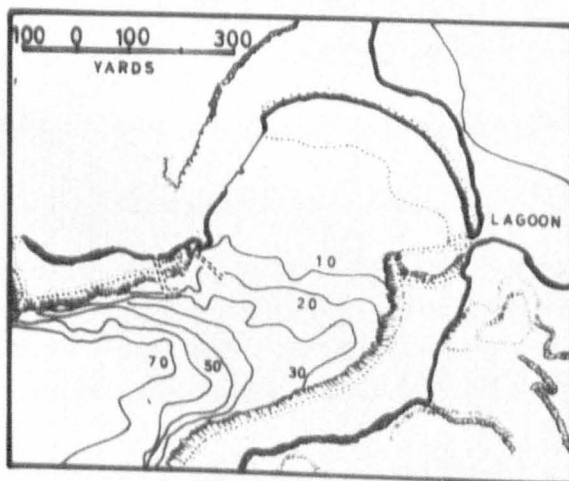
SHERM RABIGH

(8)



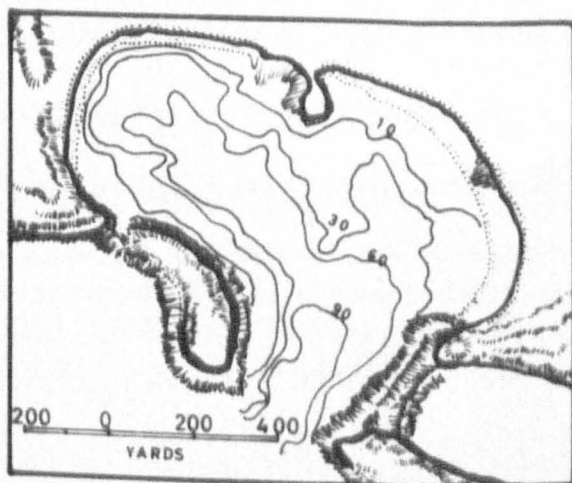
SHERM YENBO

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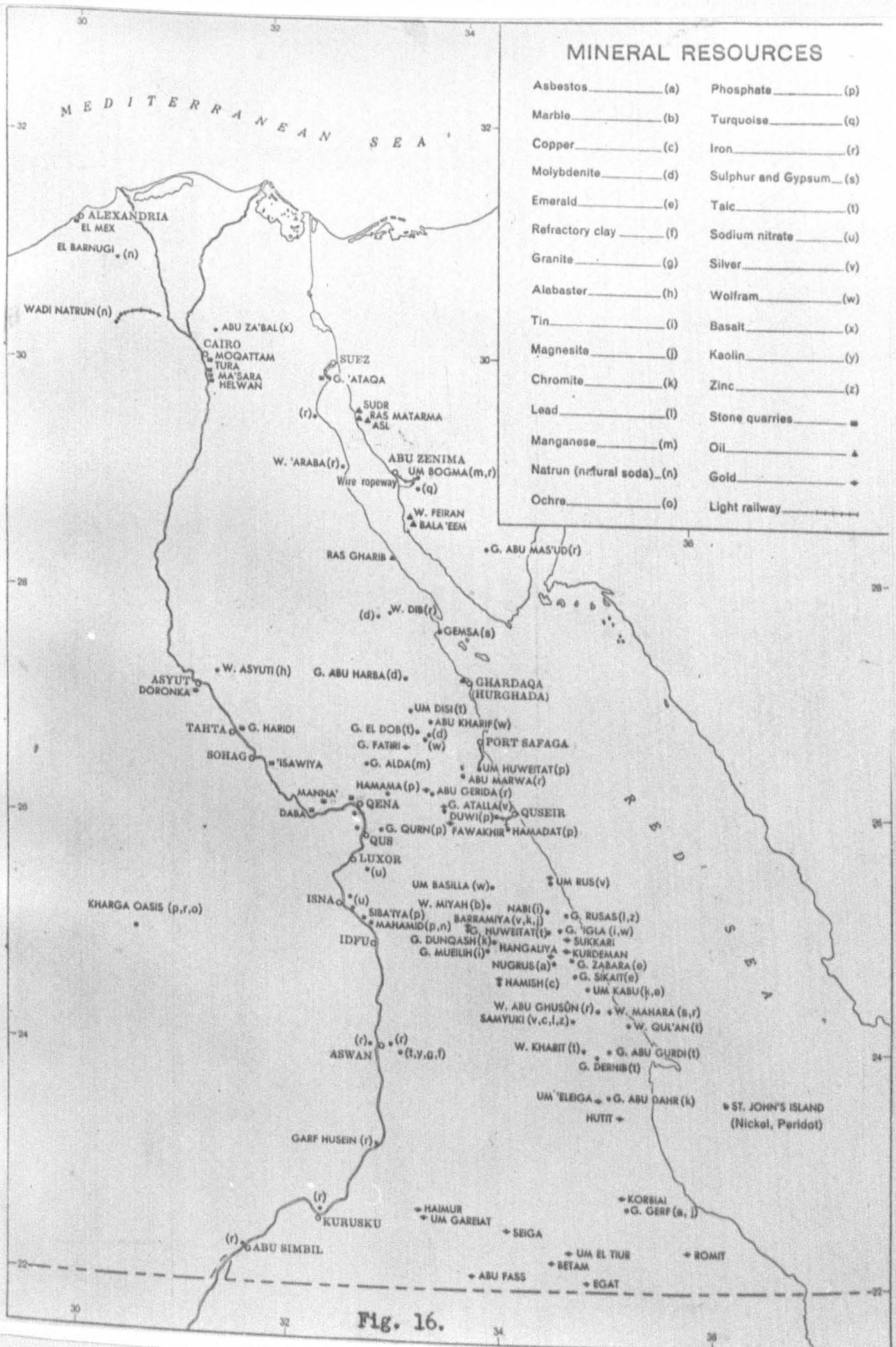
SHERM AL WEJH

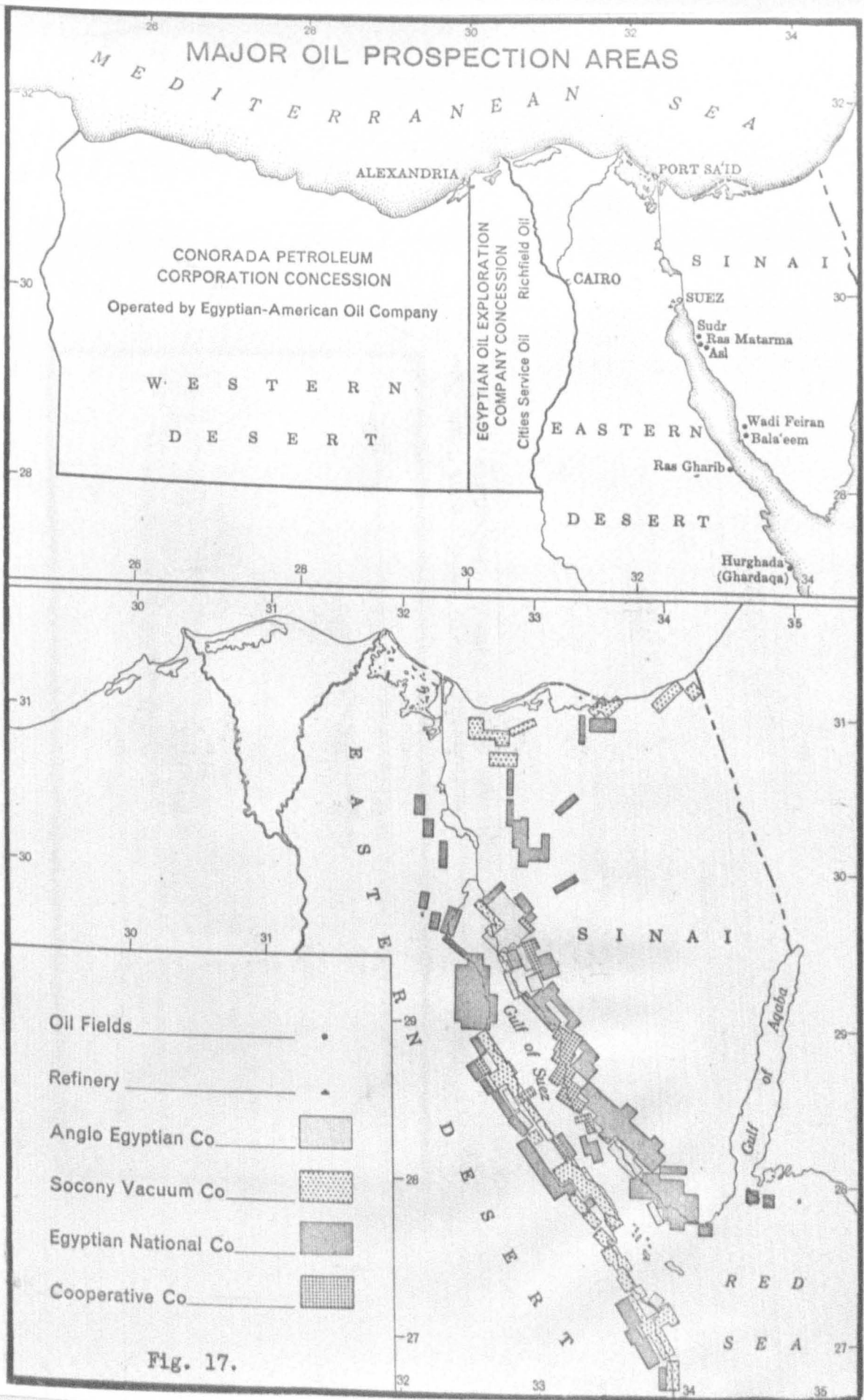
(10)



SHERM DUMEIGH

FIG.15





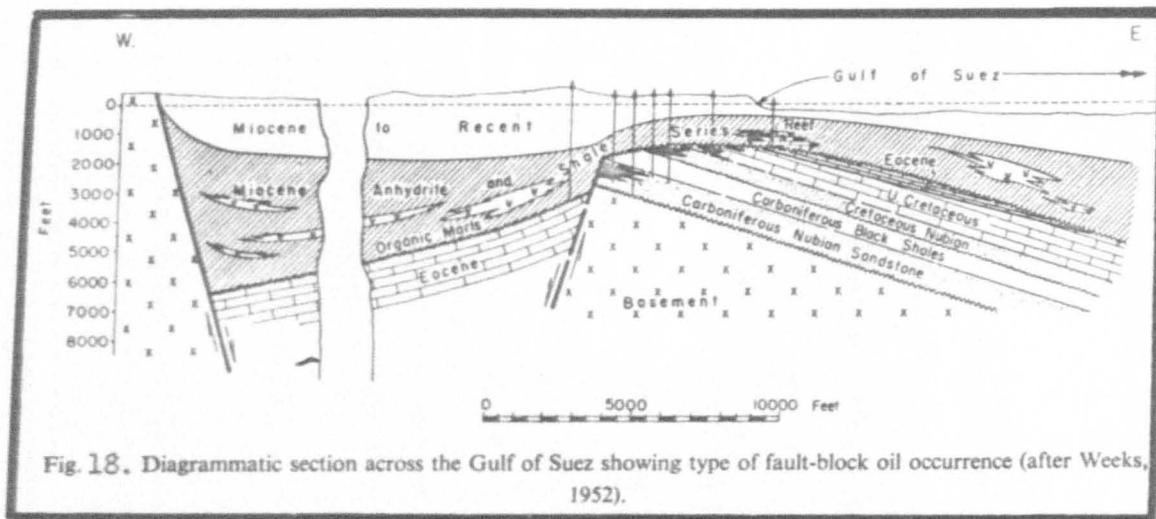
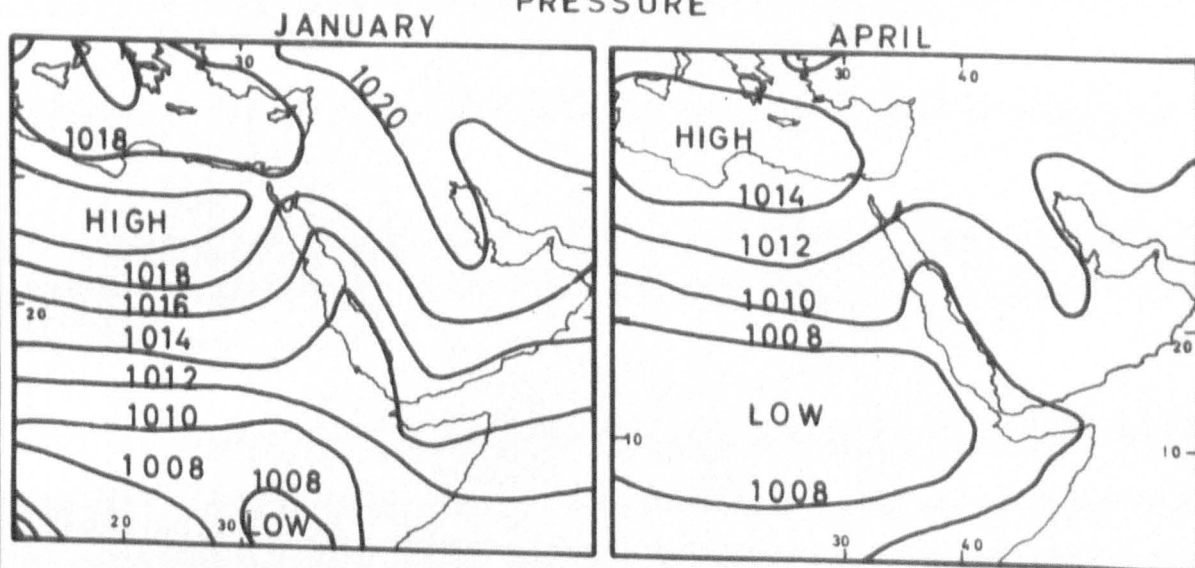


Fig. 18. Diagrammatic section across the Gulf of Suez showing type of fault-block oil occurrence (after Weeks, 1952).

Source: Weeks, G., Factors of sedimentary basin development that control oil occurrence. Bull. Am. Assoc. Petrol. Geologists, 36.

PRESSURE AND FRONTS

PRESSURE



DIRECTION OF AIR MOVEMENT

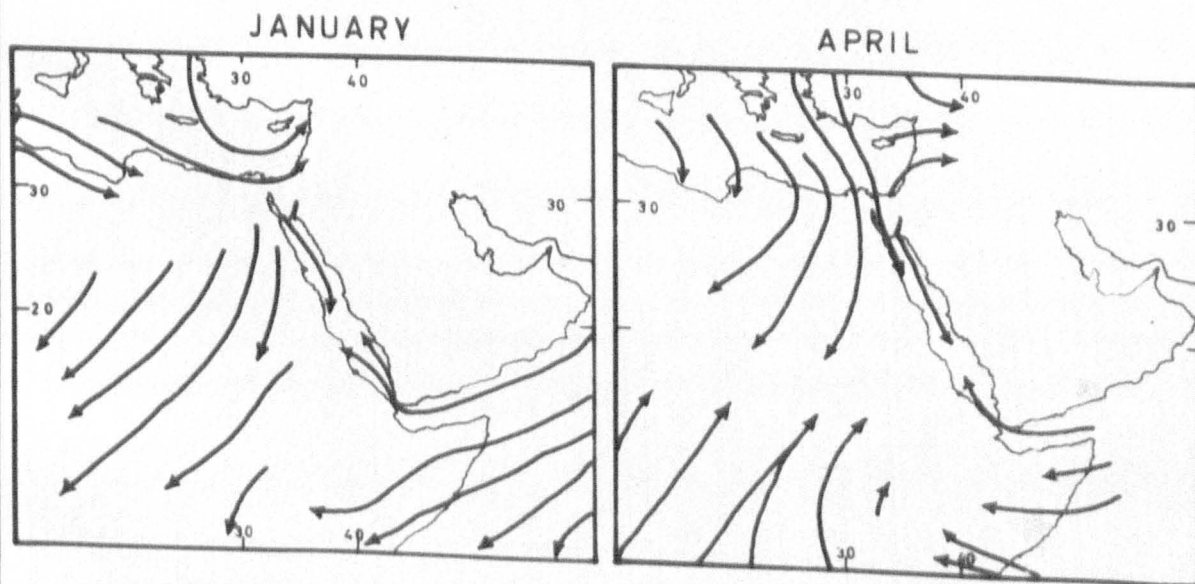
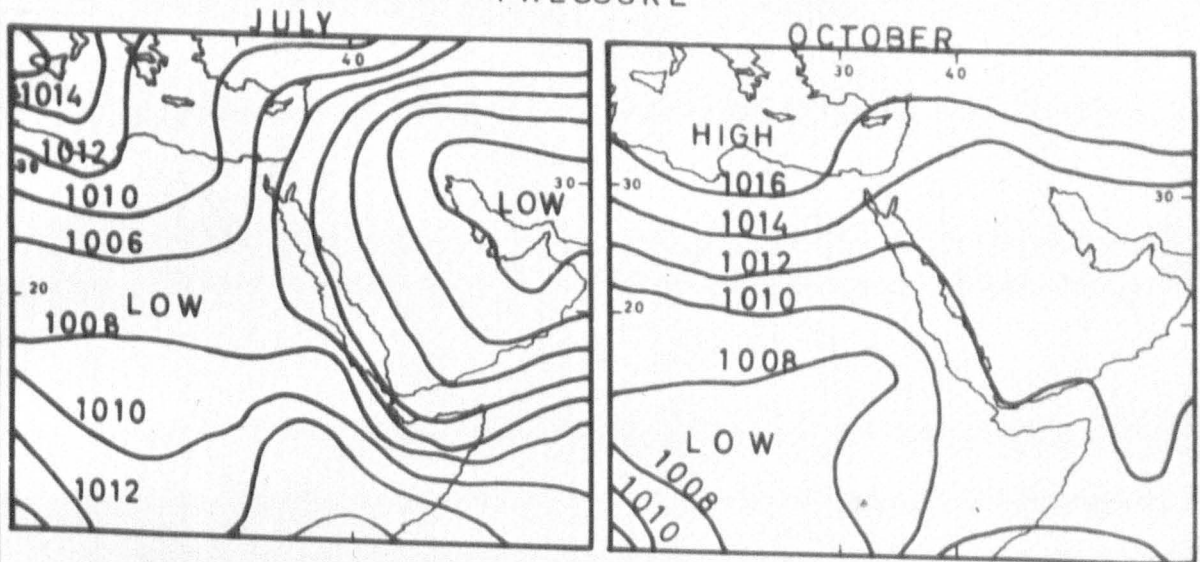


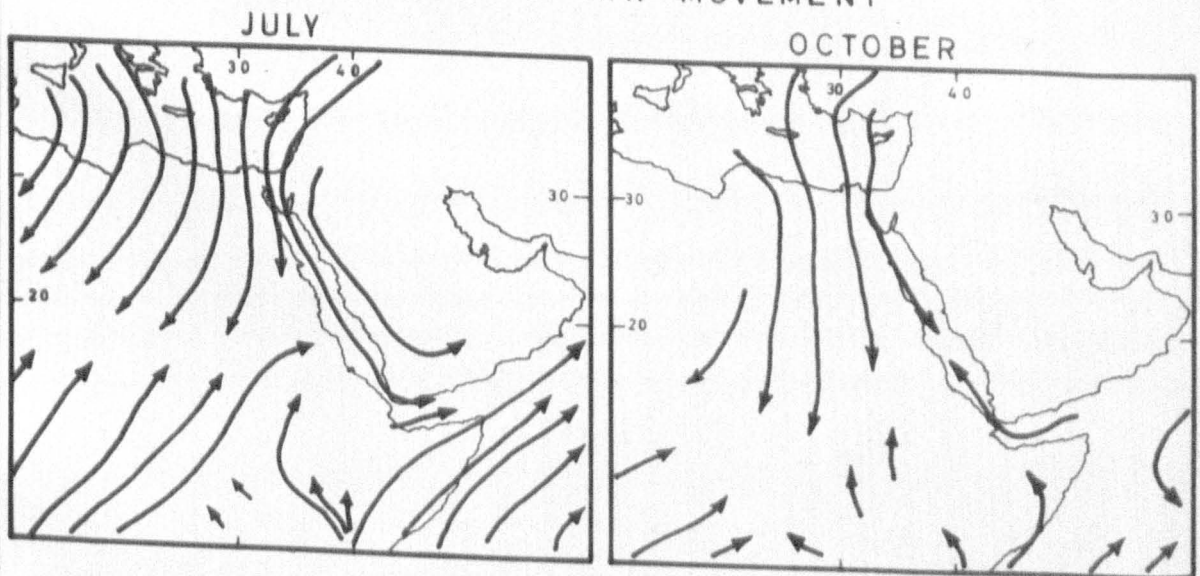
FIG.19

PRESSURE AND FRONTS

PRESSURE



DIRECTION OF AIR MOVEMENT



SOURCE: METEOROLOGICAL OFFICE LONDON 1951

FIG. 20

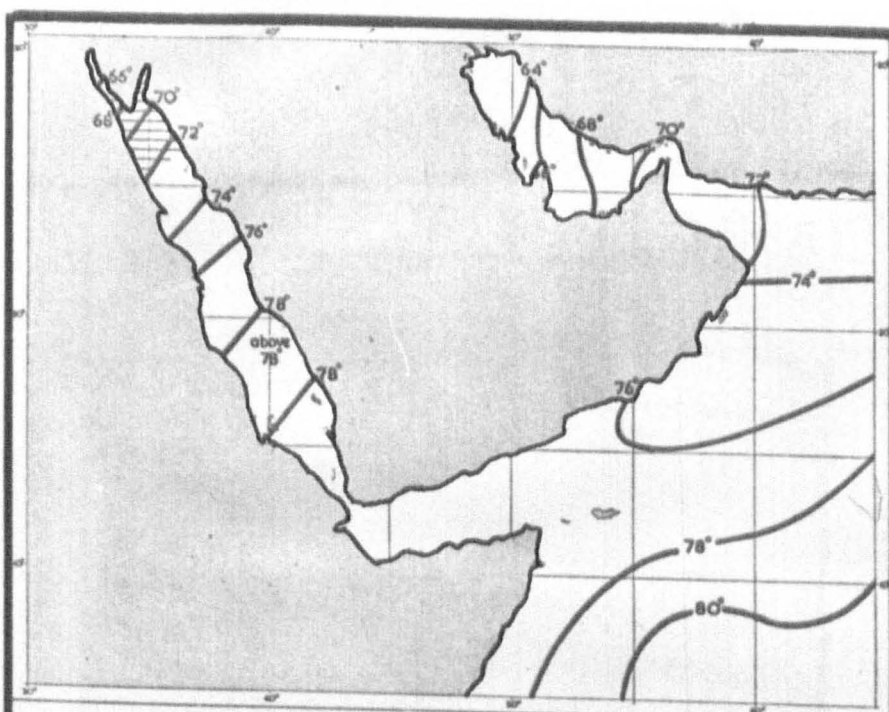


Fig. 21. February.

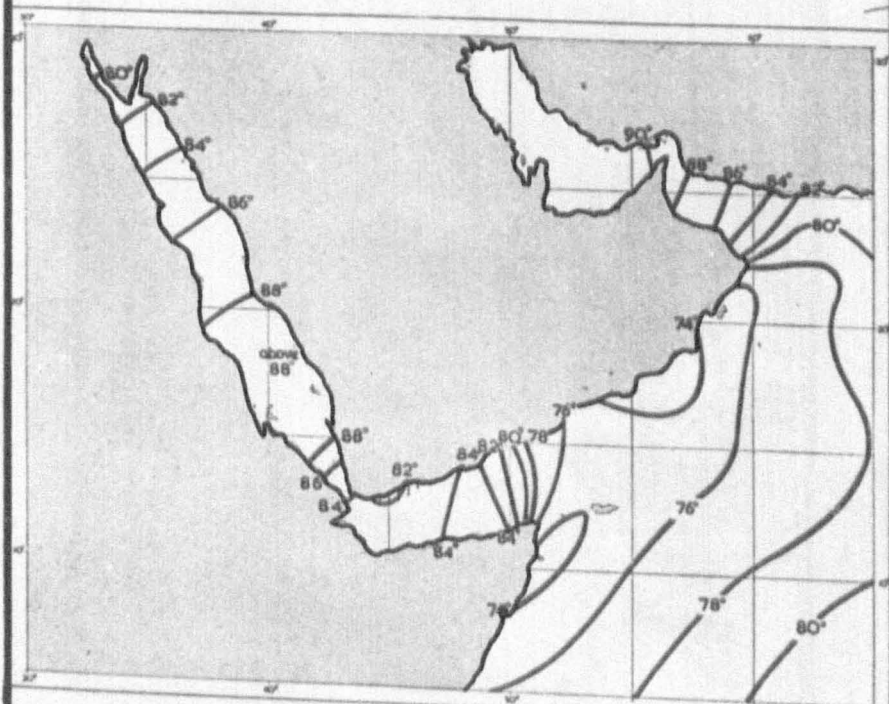


Fig. 21. August.

Mean sea surface temperature (° Fahrenheit.)

This map illustrates the Red Sea region, highlighting the trade routes of the Nabataeans and the Roman Empire. Key geographical features and cities are labeled, including the Arabian Desert, the Red Sea, and the Nile River. The map also shows the locations of various trade centers and ports, such as Gaza, Anthon, S'baia, Arsinoe, Ezion Geber, Petra, Madain Salih, Dedan, Leuce Come, Yathrib, Macoraba, Berenice, Ptolemais, Adulise, Axum, Ghumdane, Sapphar, Muza, Dioscorus, and Avantes. A scale bar at the bottom indicates distances in miles.

FIG. 22

Rail; Liner Routes and Frequencies; Ports

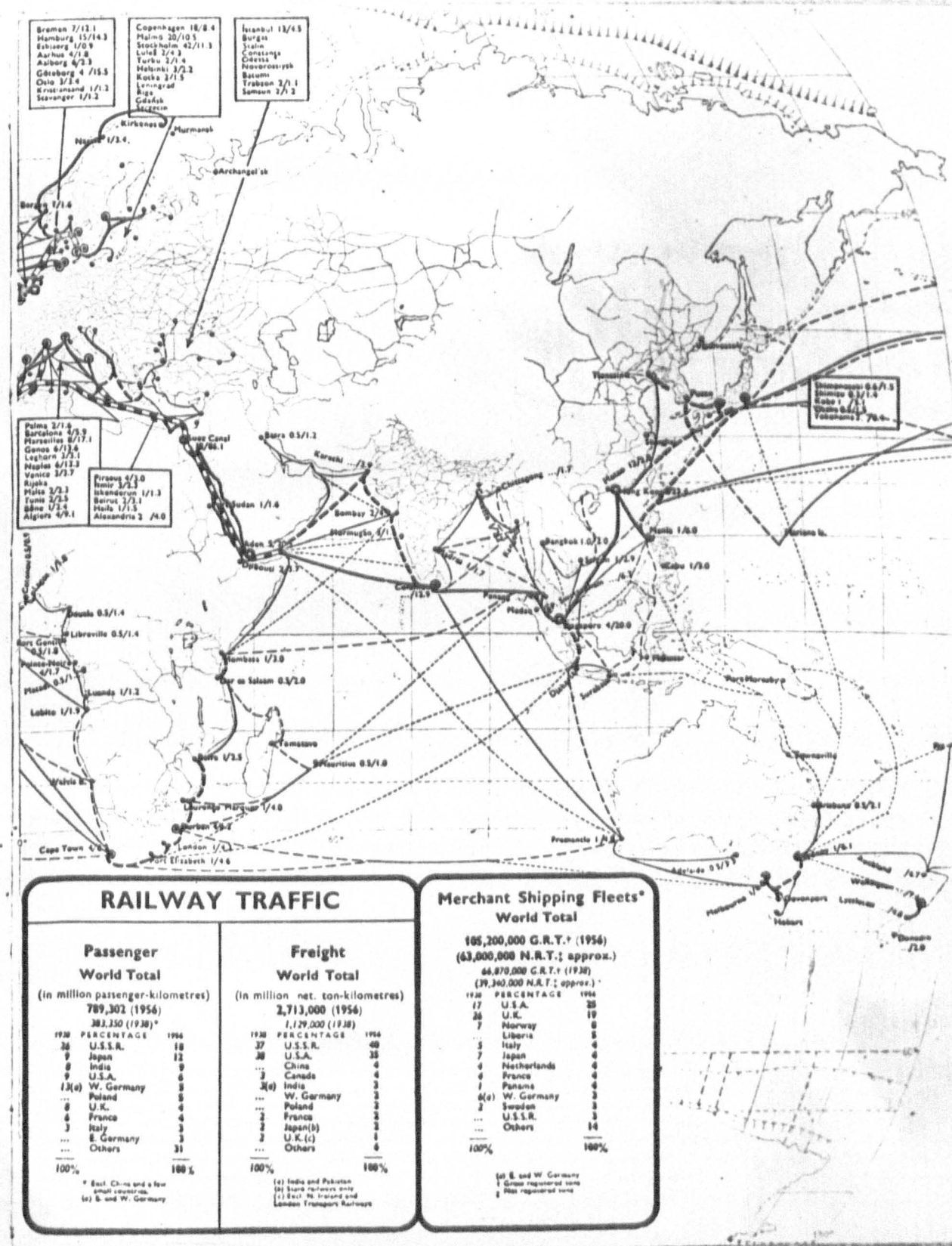
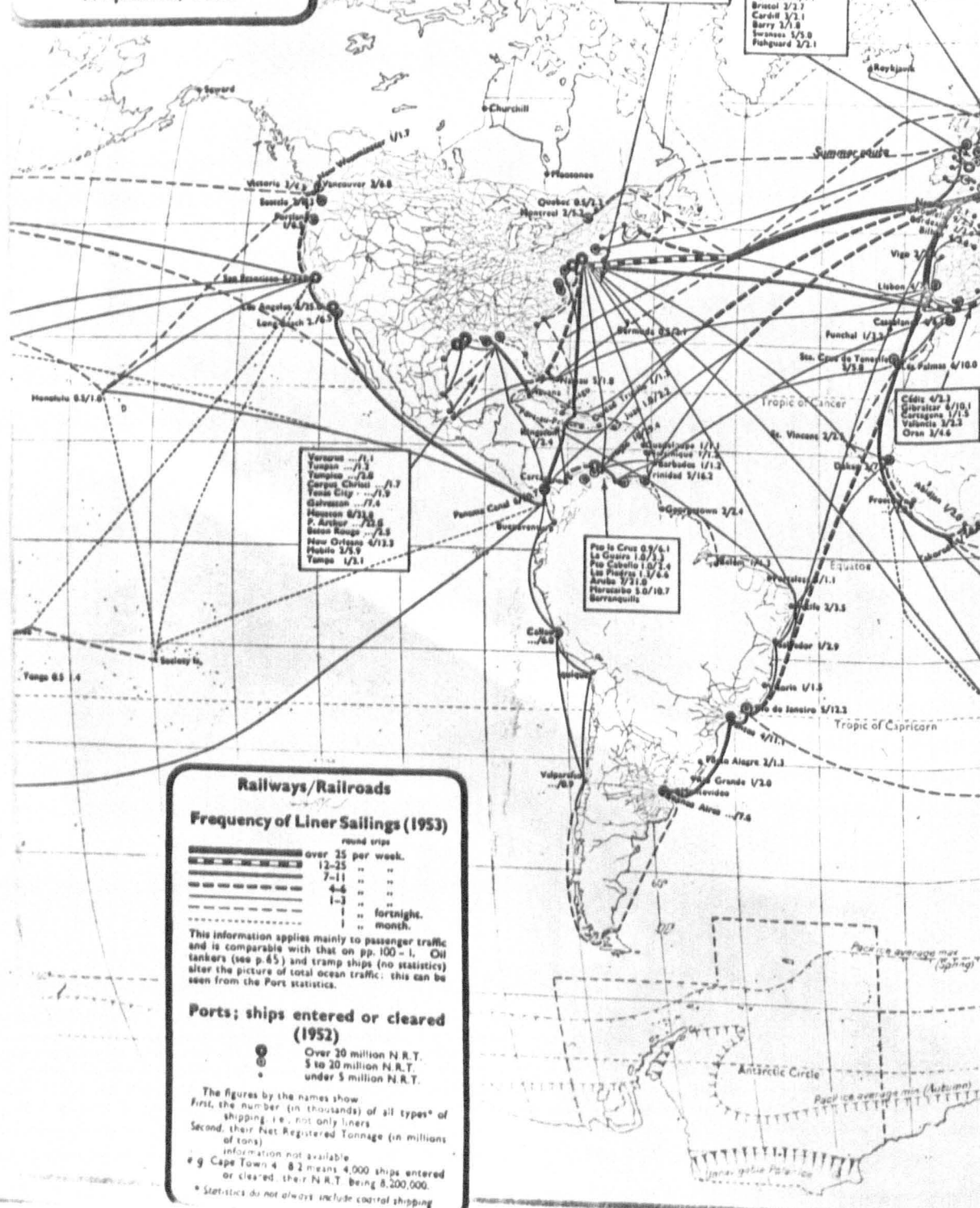


Fig. 23

GOODS TRAFFIC VIA THE RED SEA

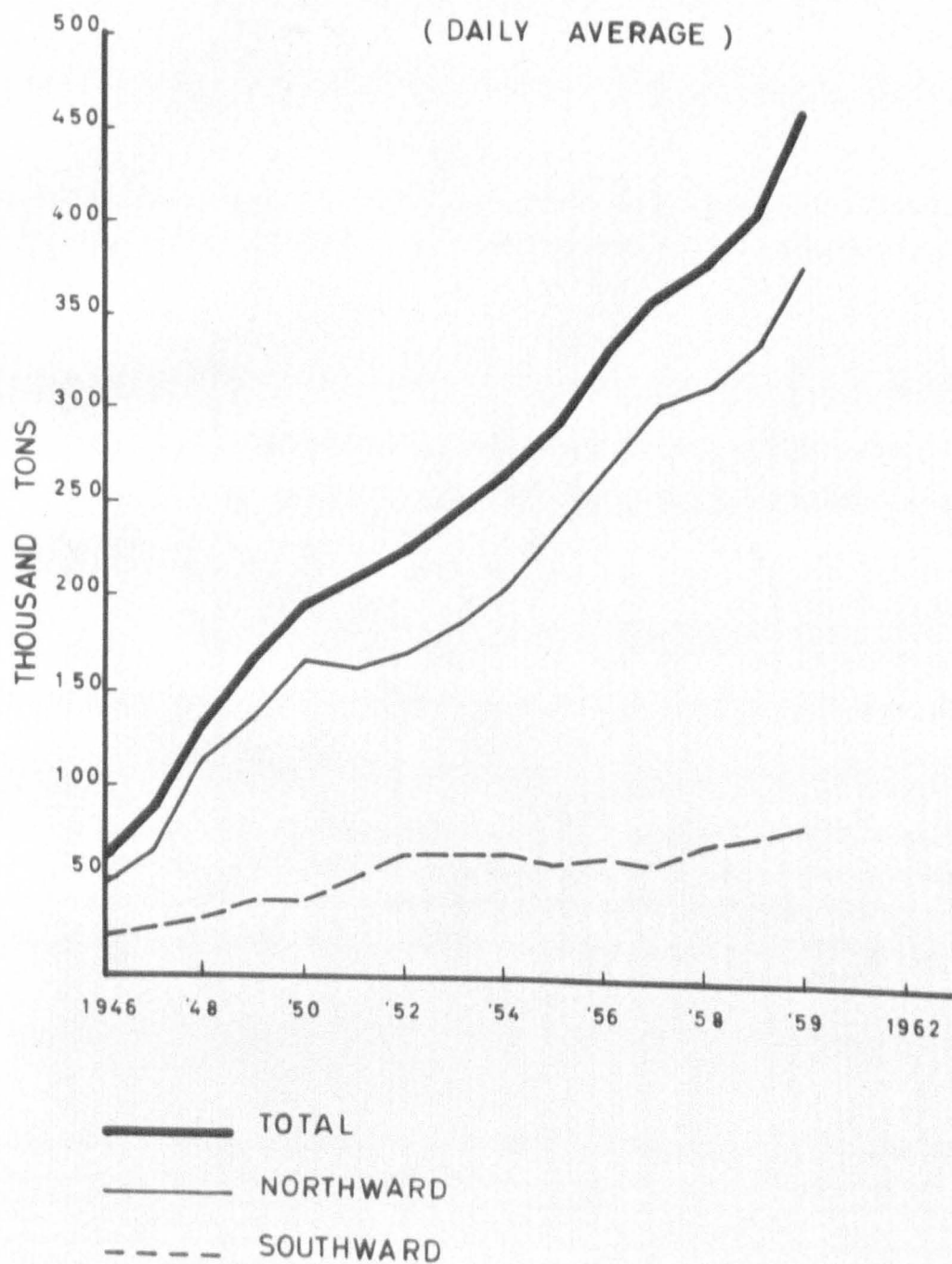
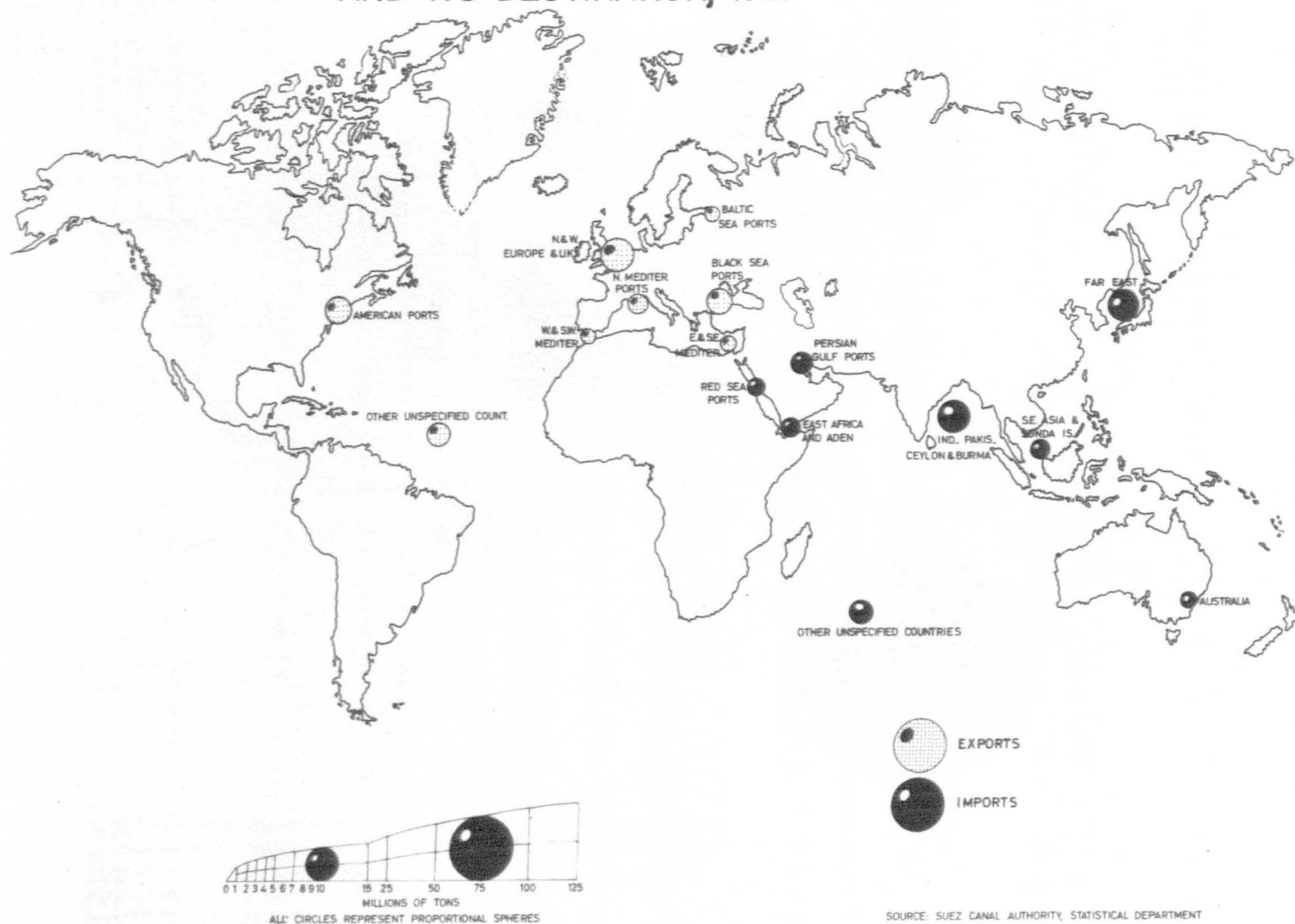


Fig. 25

SOUTHBOUND TRAFFIC THROUGH THE RED SEA AND ITS DESTINATION, 1960



SOURCE: SUEZ CANAL AUTHORITY, STATISTICAL DEPARTMENT

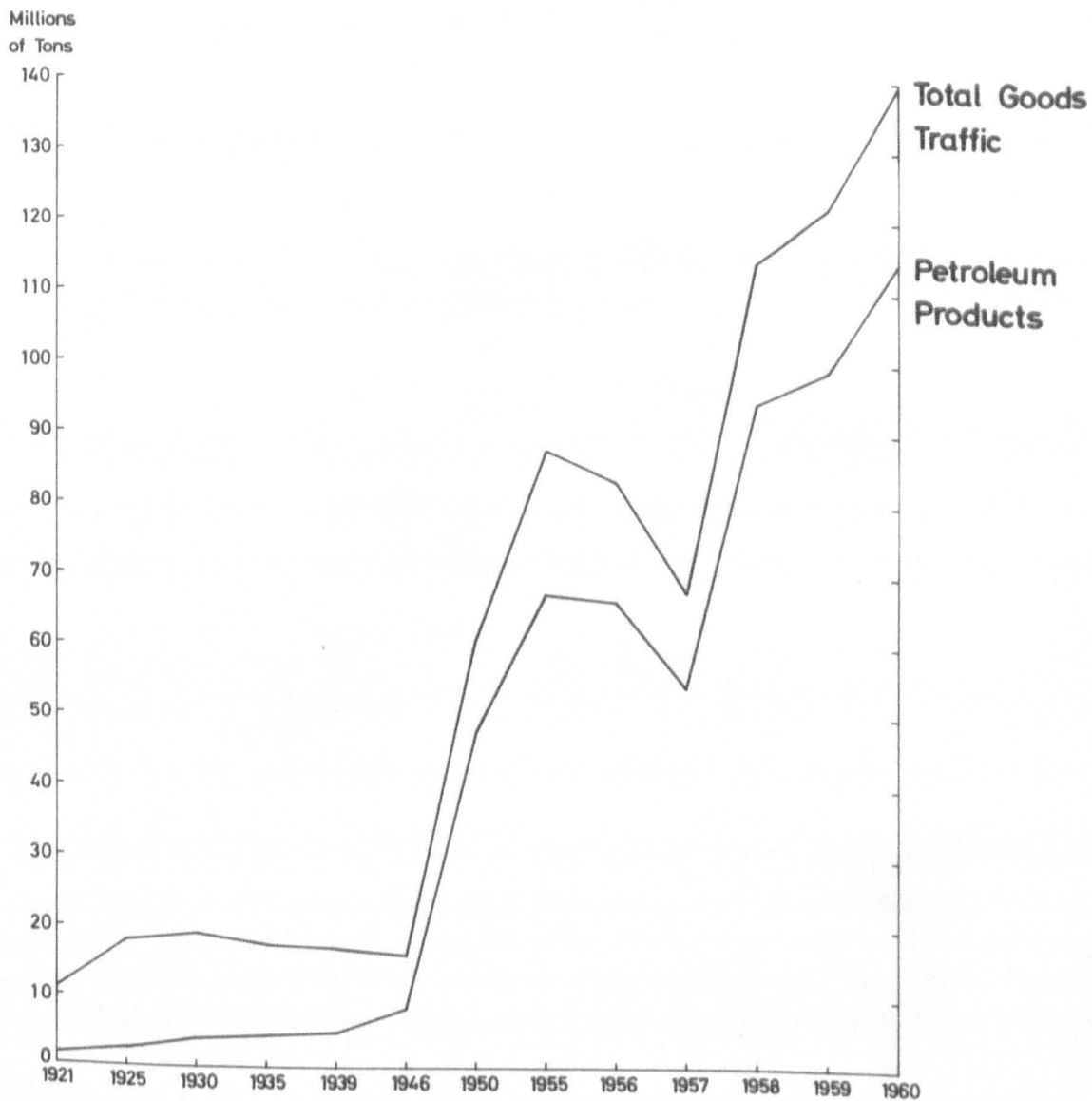
Fig. 26

CLASSIFICATION OF GOODS TRAFFIC VIA THE RED SEA (1960)



Fig. 27

THE GROWTH OF NORTHBOUND GOODS TRAFFIC THROUGH THE RED SEA

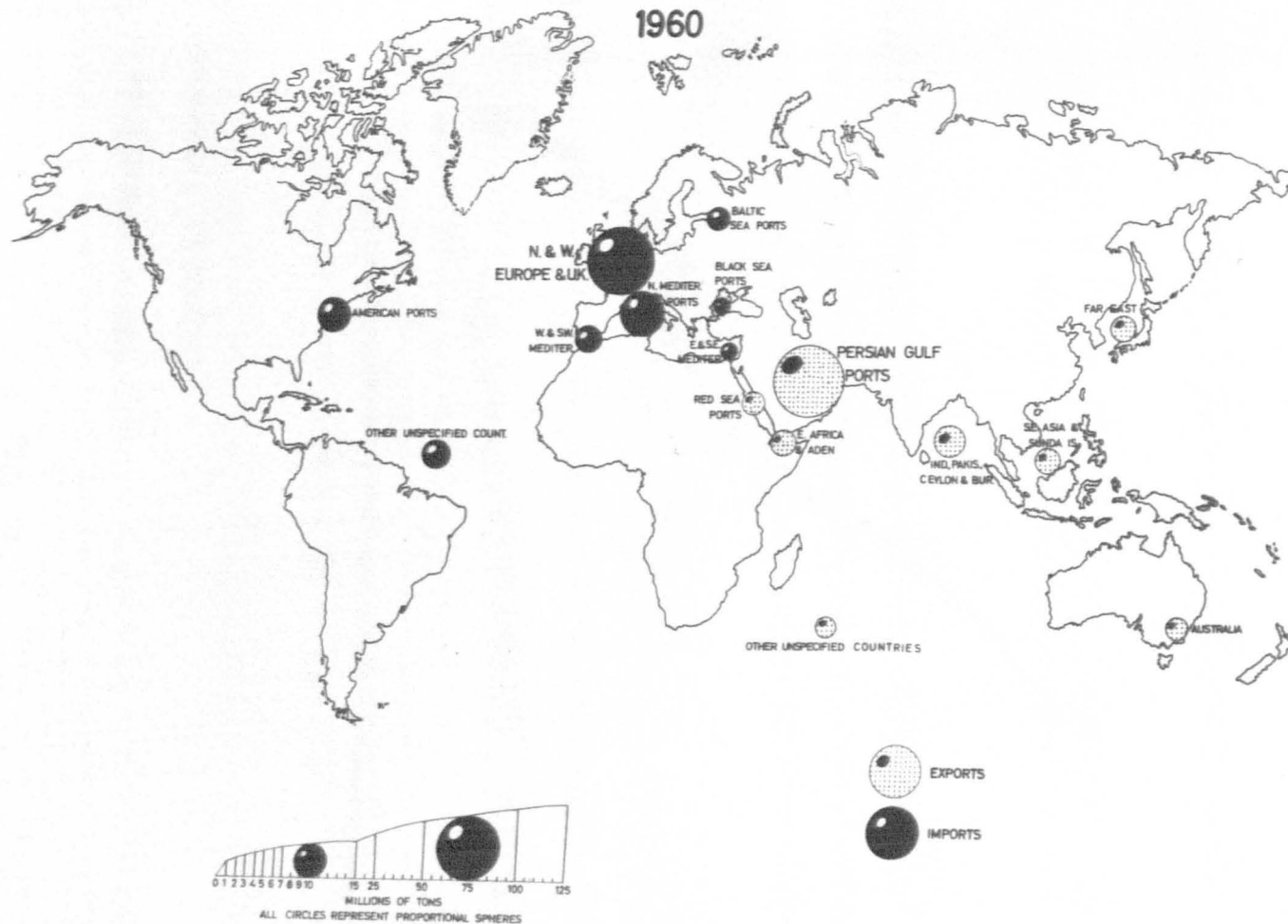


SOURCE: SUEZ CANAL AUTHORITY, STATISTICAL DEPARTMENT

Fig. 28

NORTHBOUND TRAFFIC THROUGH THE RED SEA AND ITS DESTINATION

1960



SOURCE: SUEZ CANAL AUTHORITY, STATISTICAL DEPARTMENT

Fig. 29

NORTHBOUND GOODS TRAFFIC THROUGH THE RED SEA

(DAILY AVERAGE)

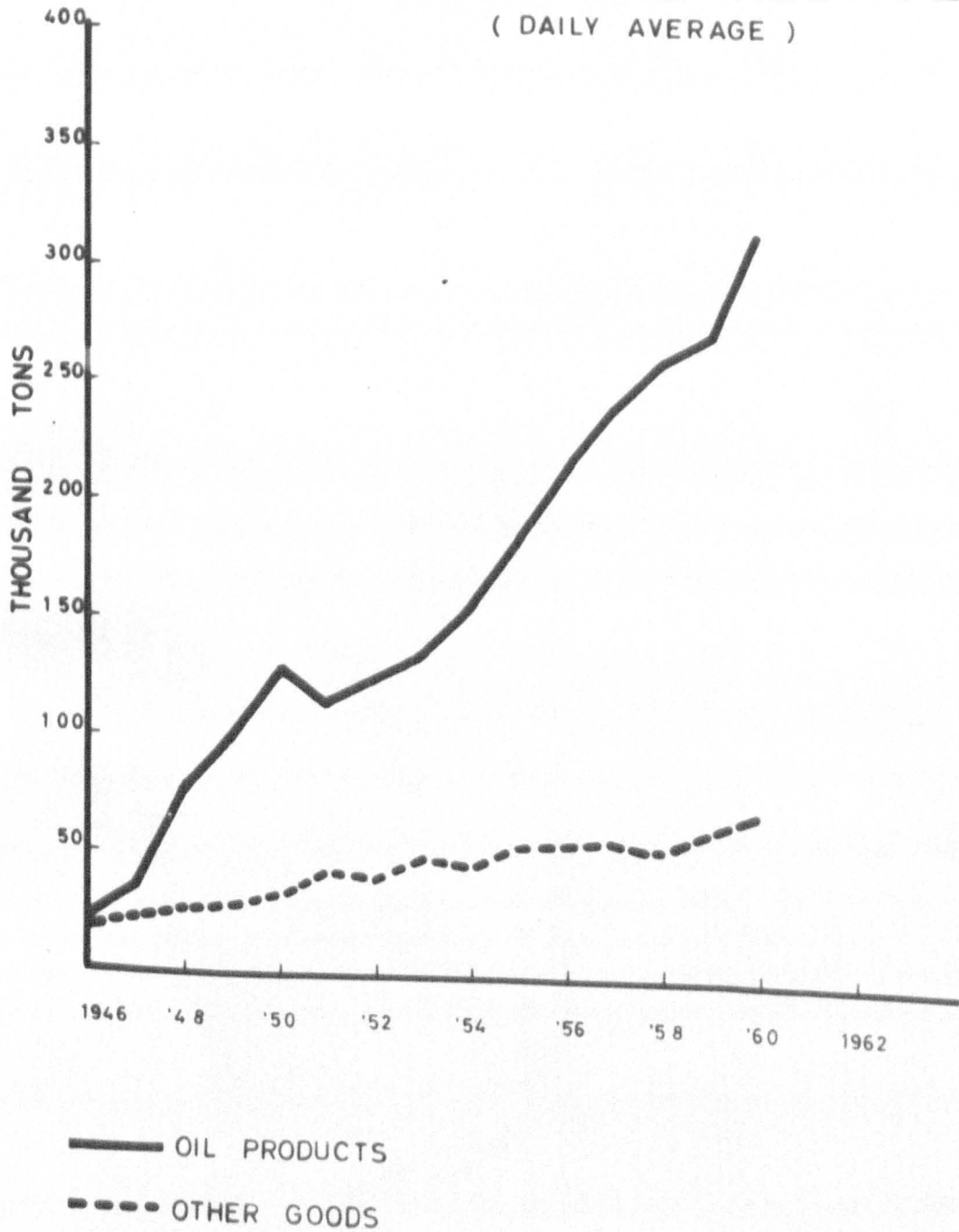


Fig. 30

NORTHBOUND OIL TRAFFIC THROUGH THE RED SEA AND ITS DESTINATION 1960

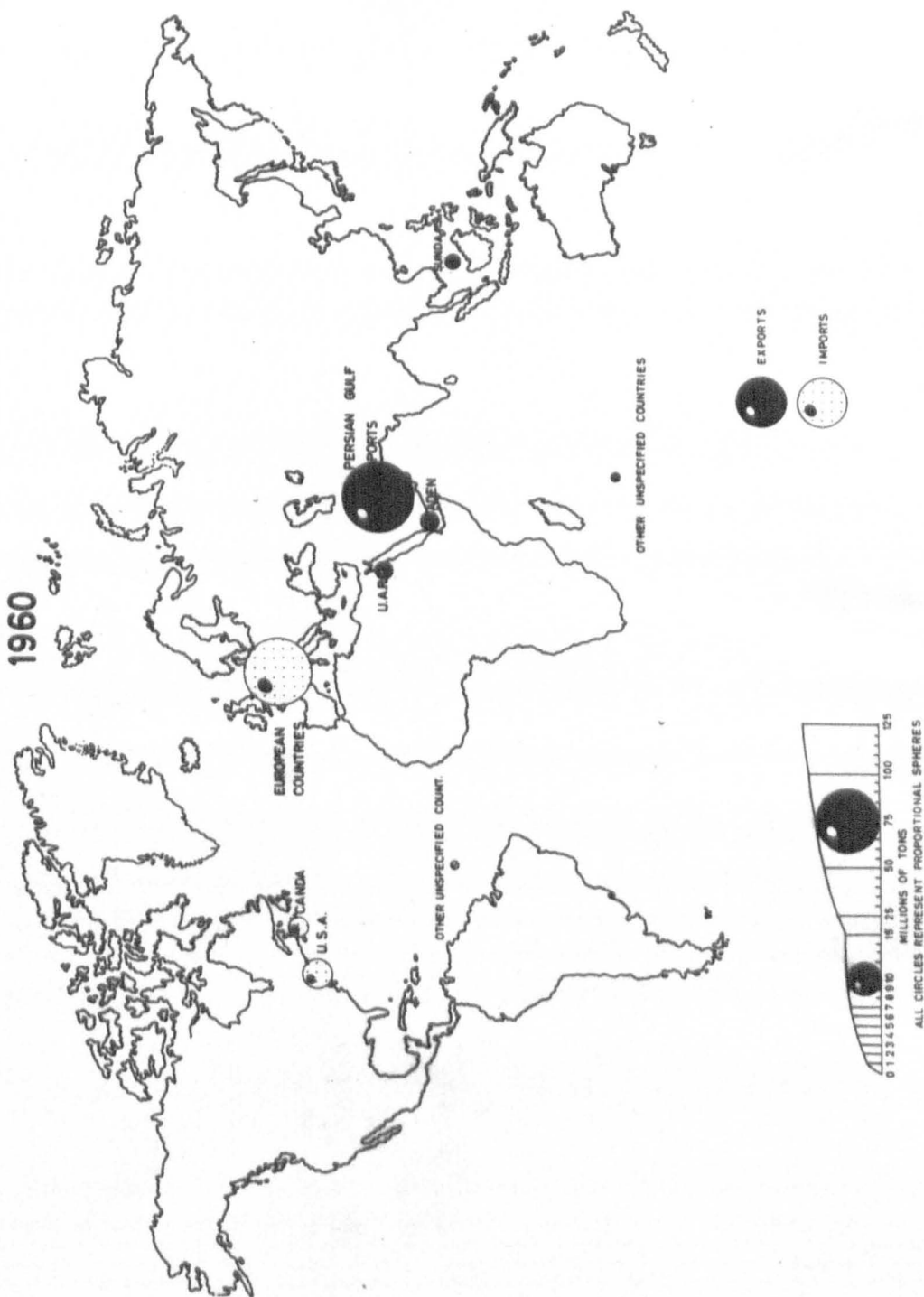


Fig. 31

NET TONNAGE & NO. OF VESSELS VIA THE RED SEA (1960)

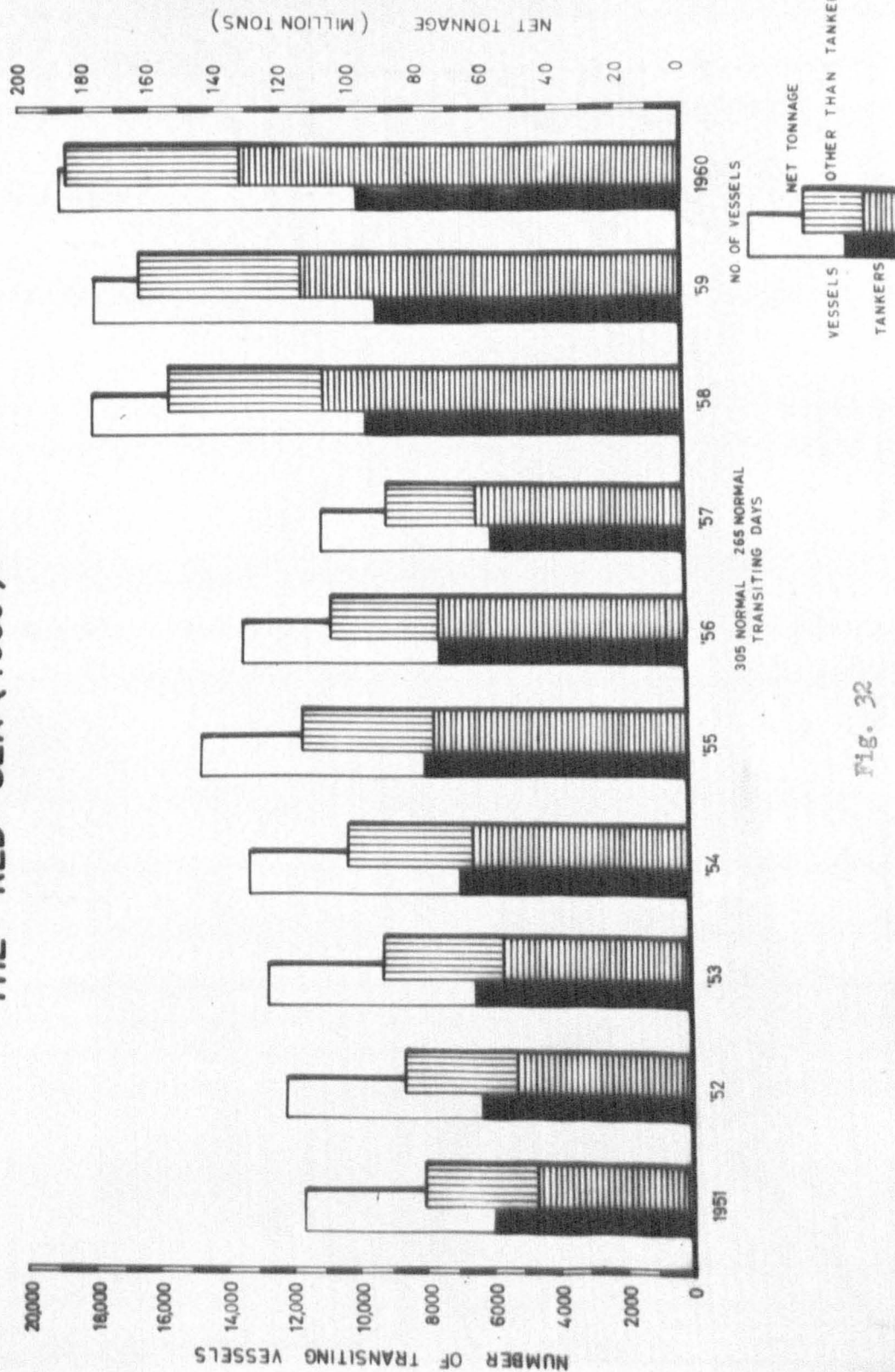


Fig. 32

SUEZ (TOPOGRAPHY)

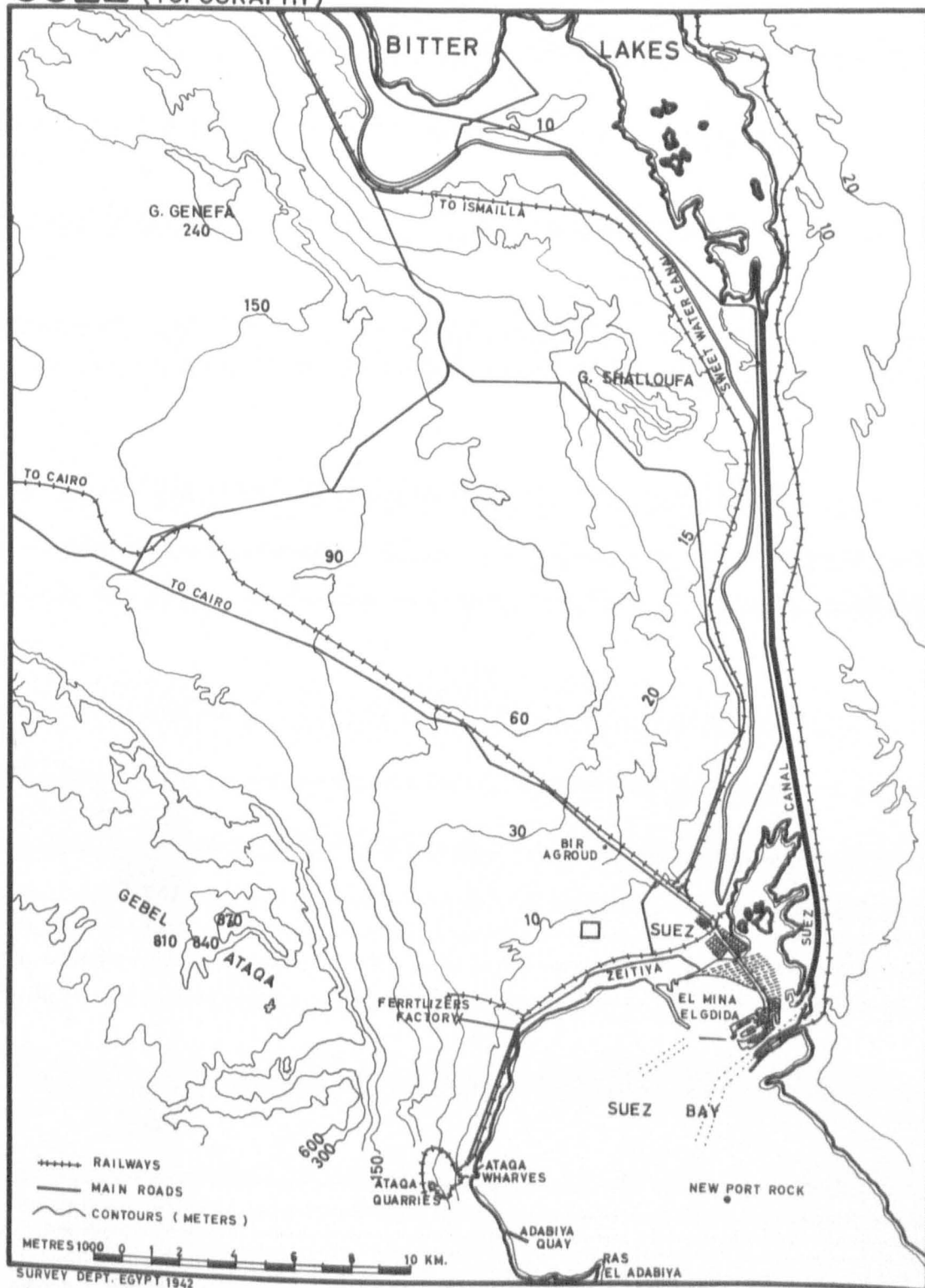


Fig. 33

SUEZ BAY

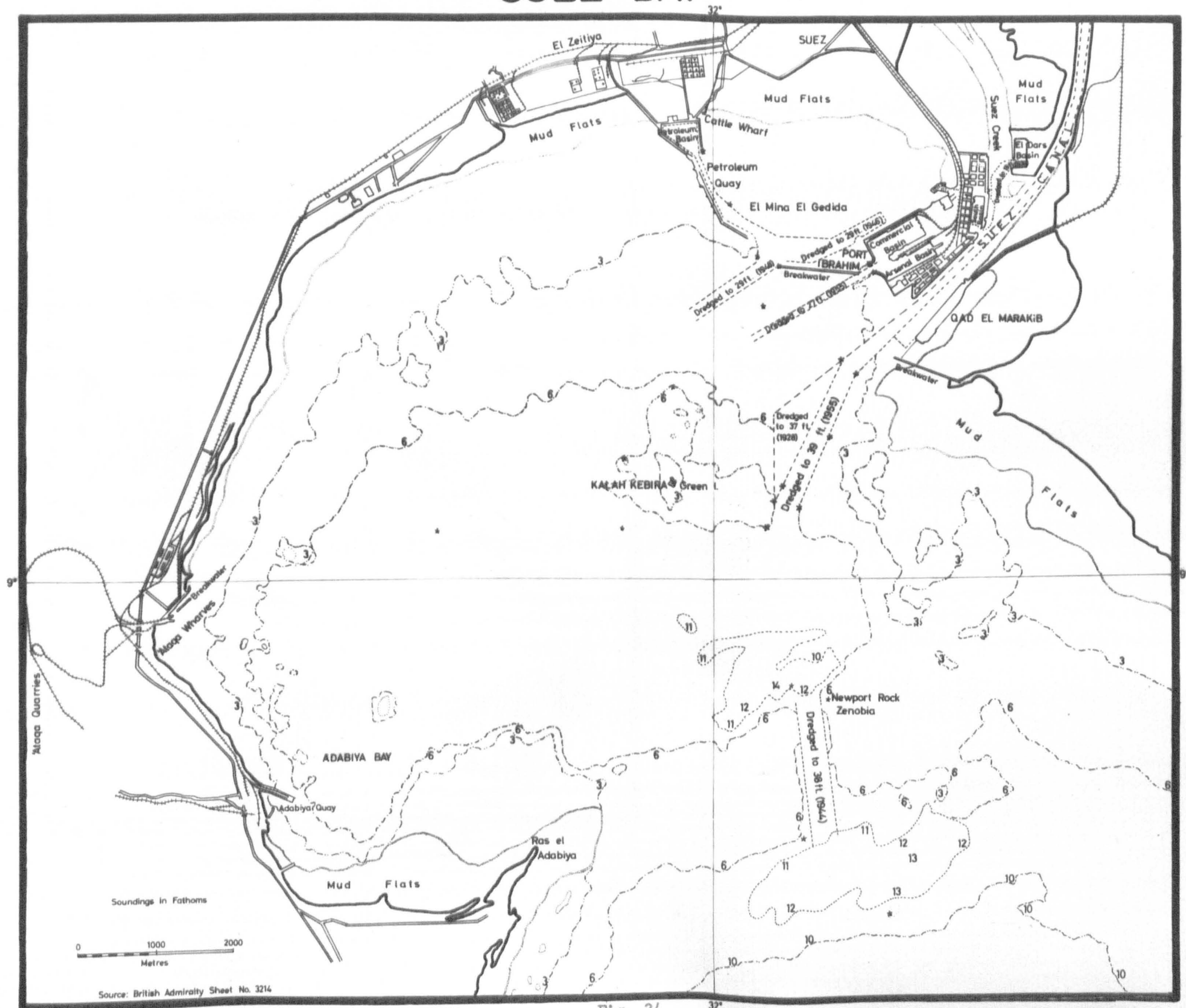


Fig. 34

THE GROWTH OF PORT SUEZ (1800 - 1926)

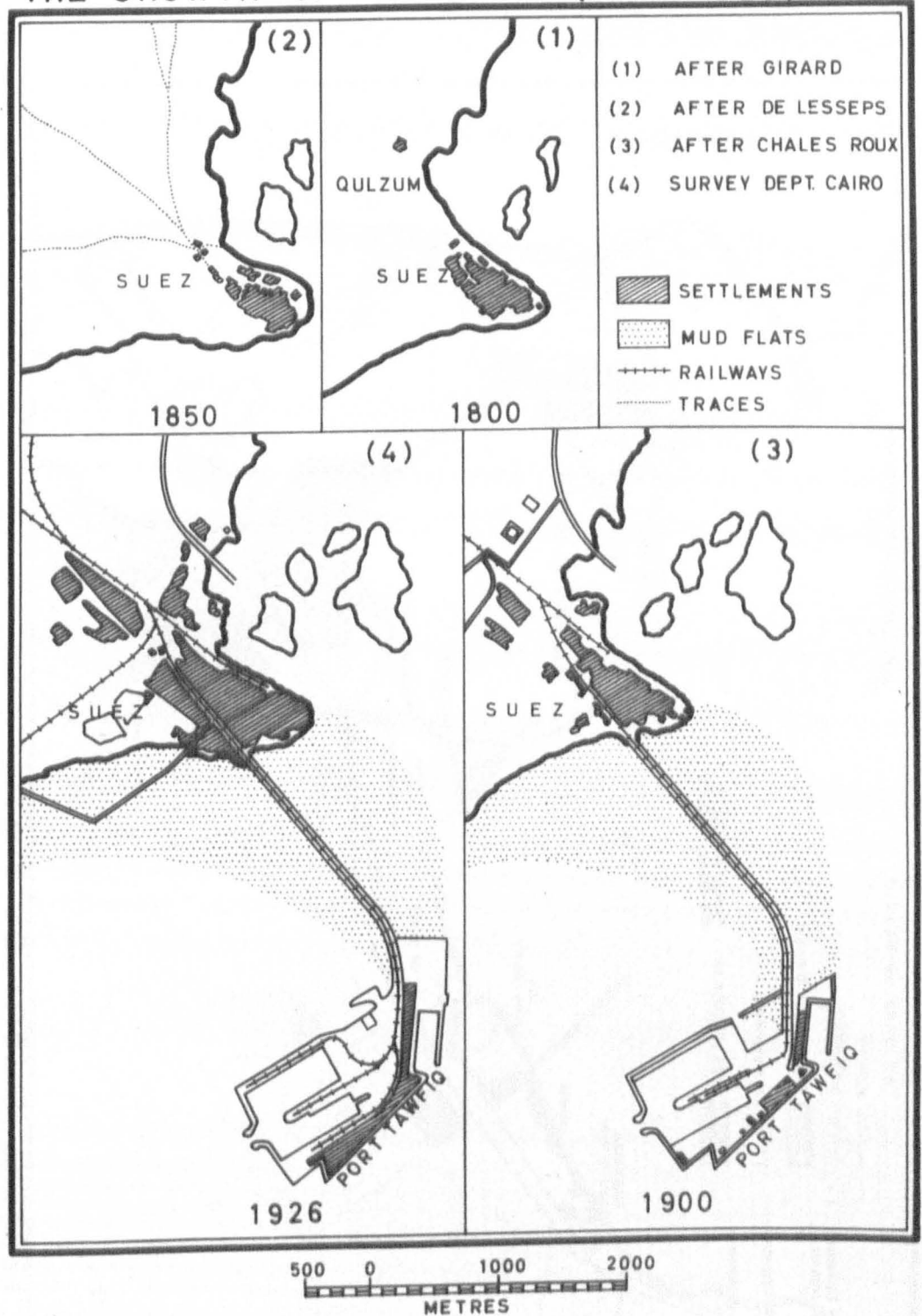


Fig. 35

THE PRESENT LAYOUT OF SUEZ

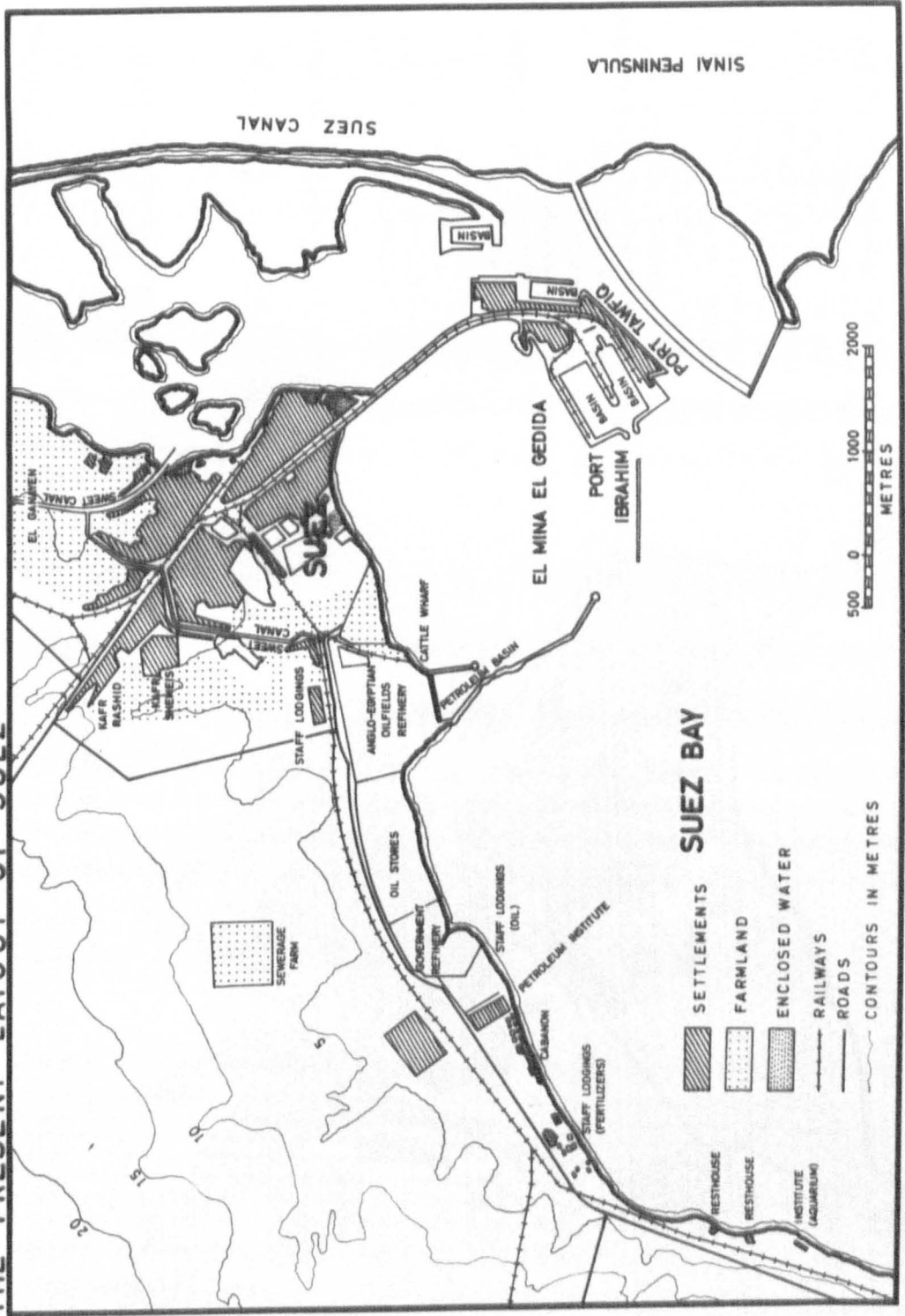


Fig. 36

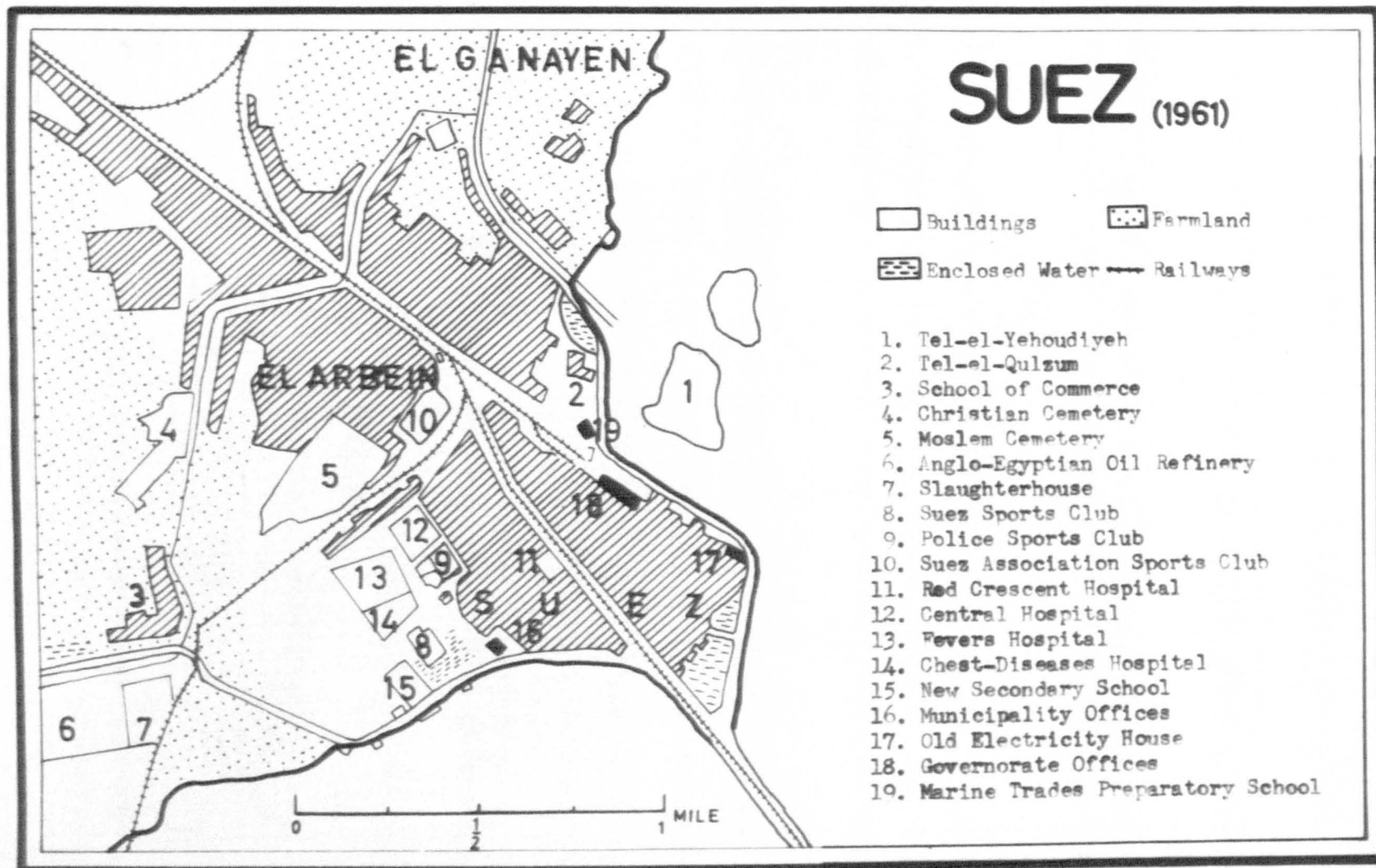


Fig. 37

SUEZ : URBAN FUNCTIONS

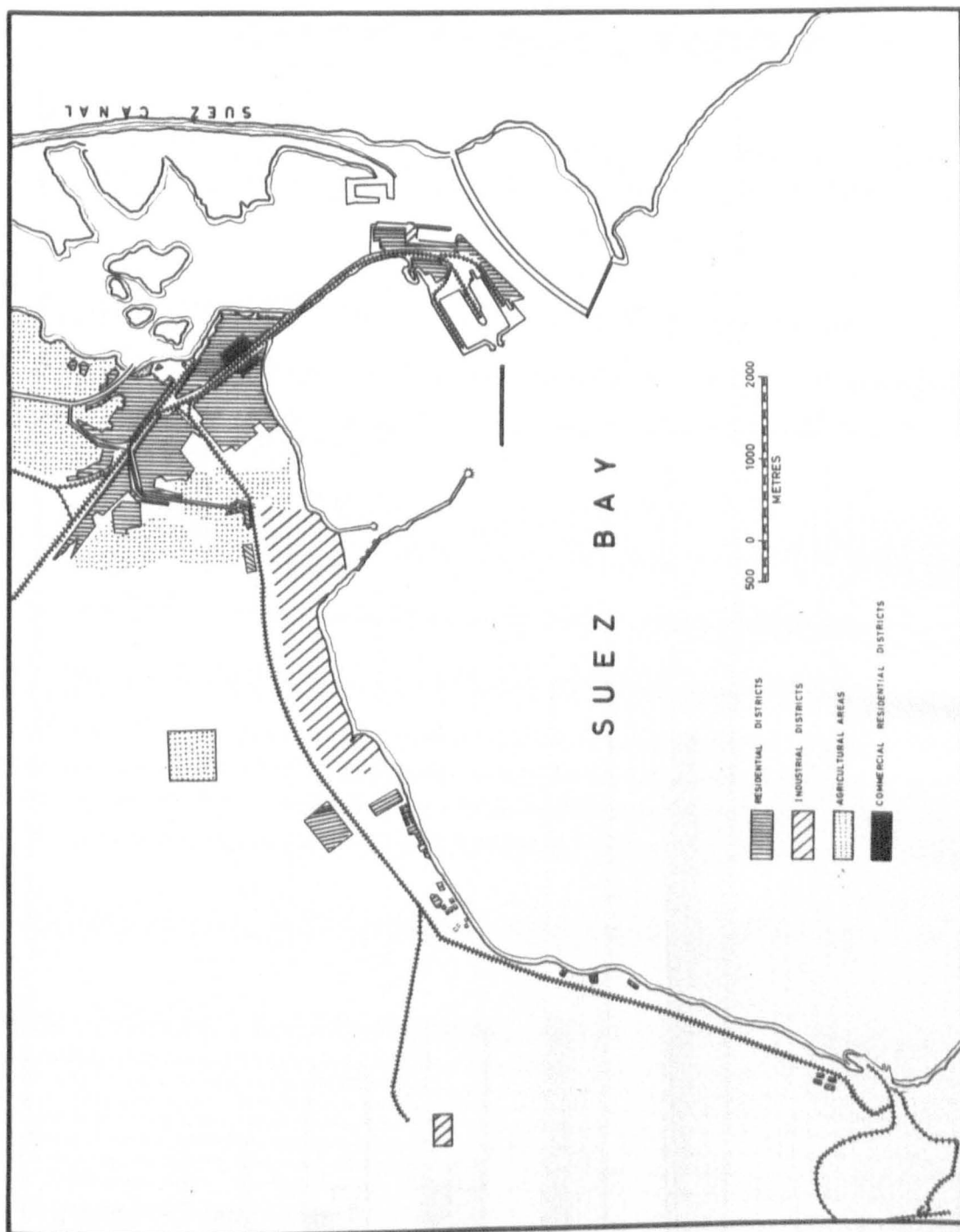


Fig. 38

POPULATION CHANGE IN SUEZ (1907 - 1960)

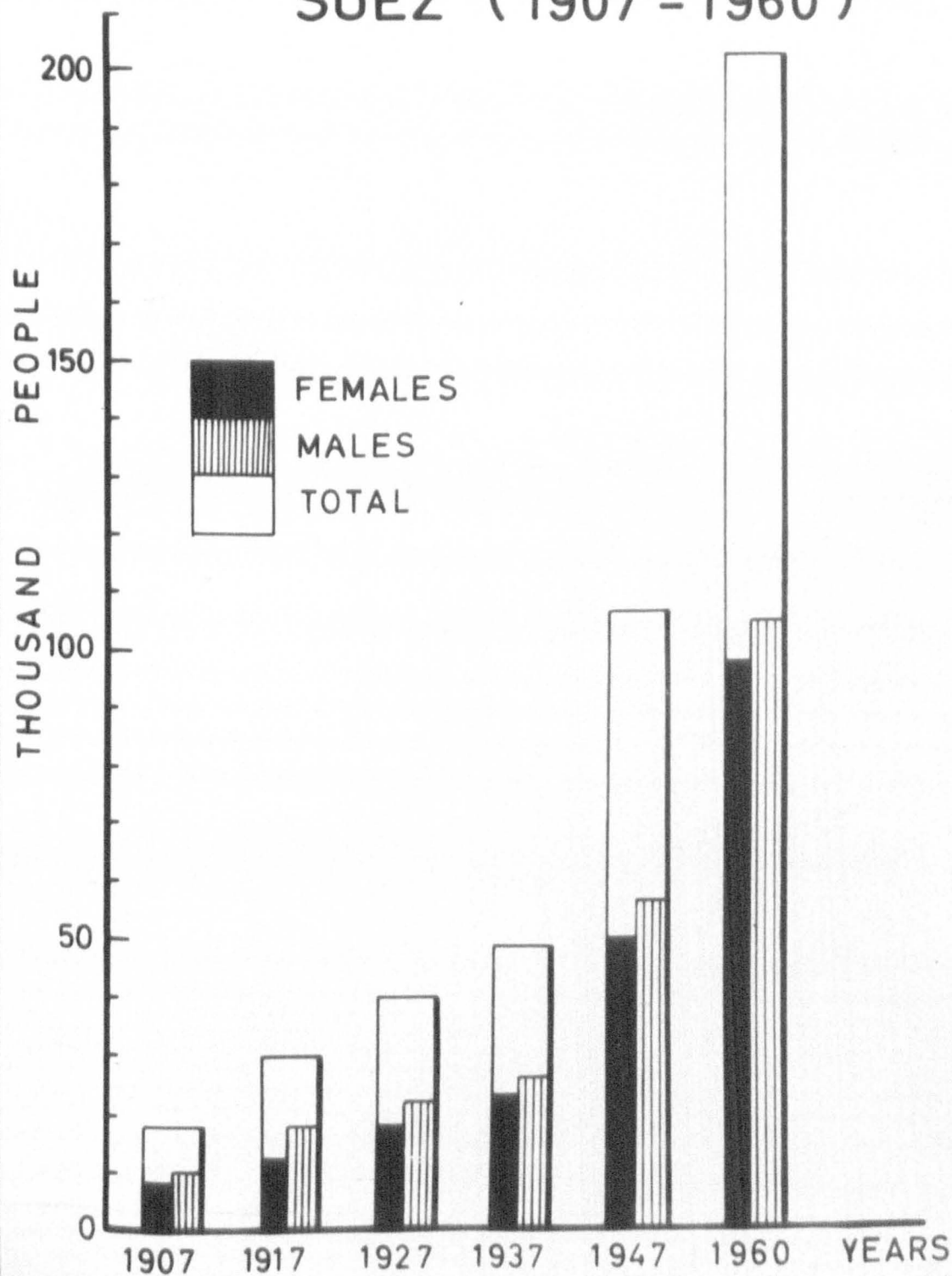


Fig. 39

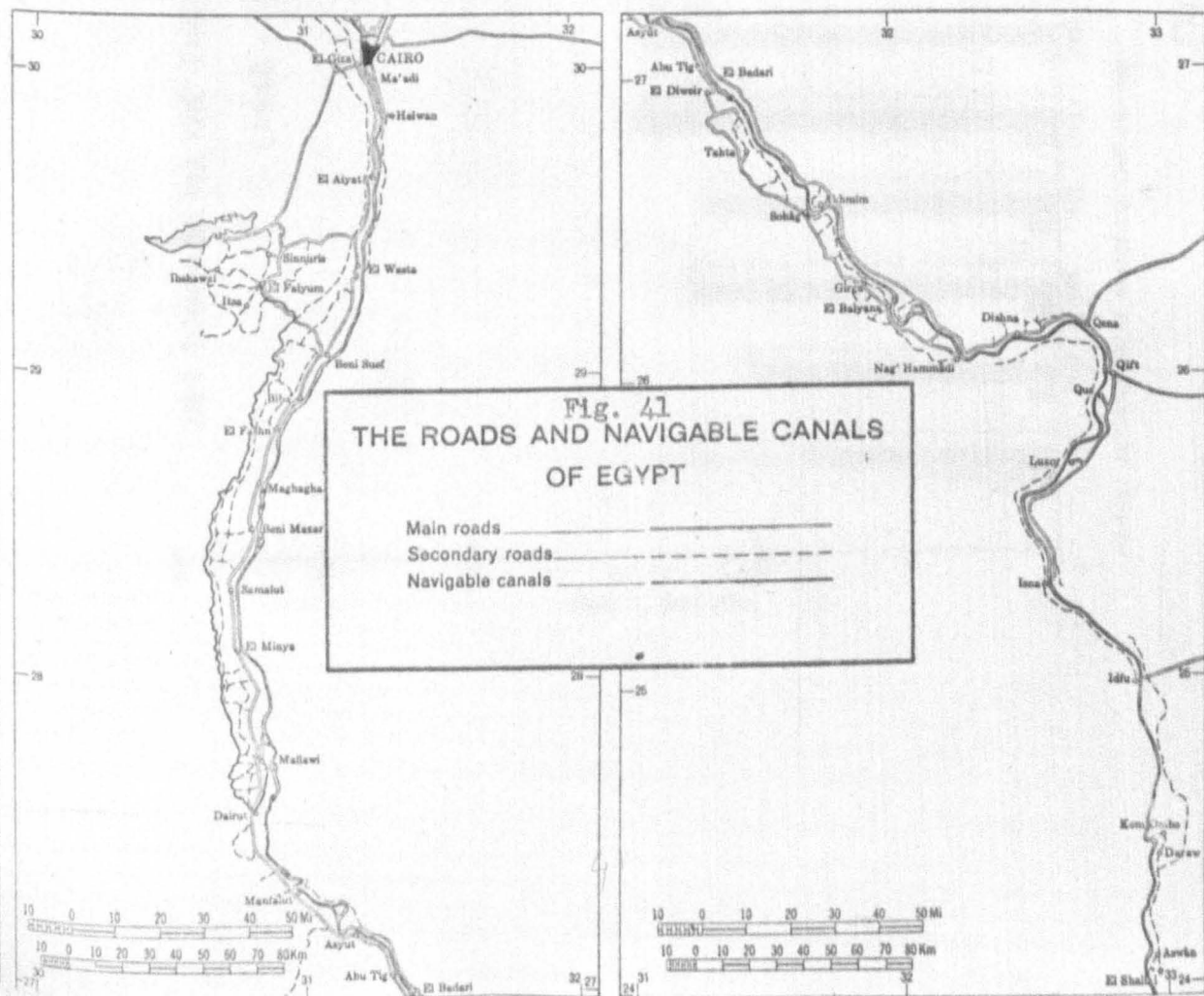
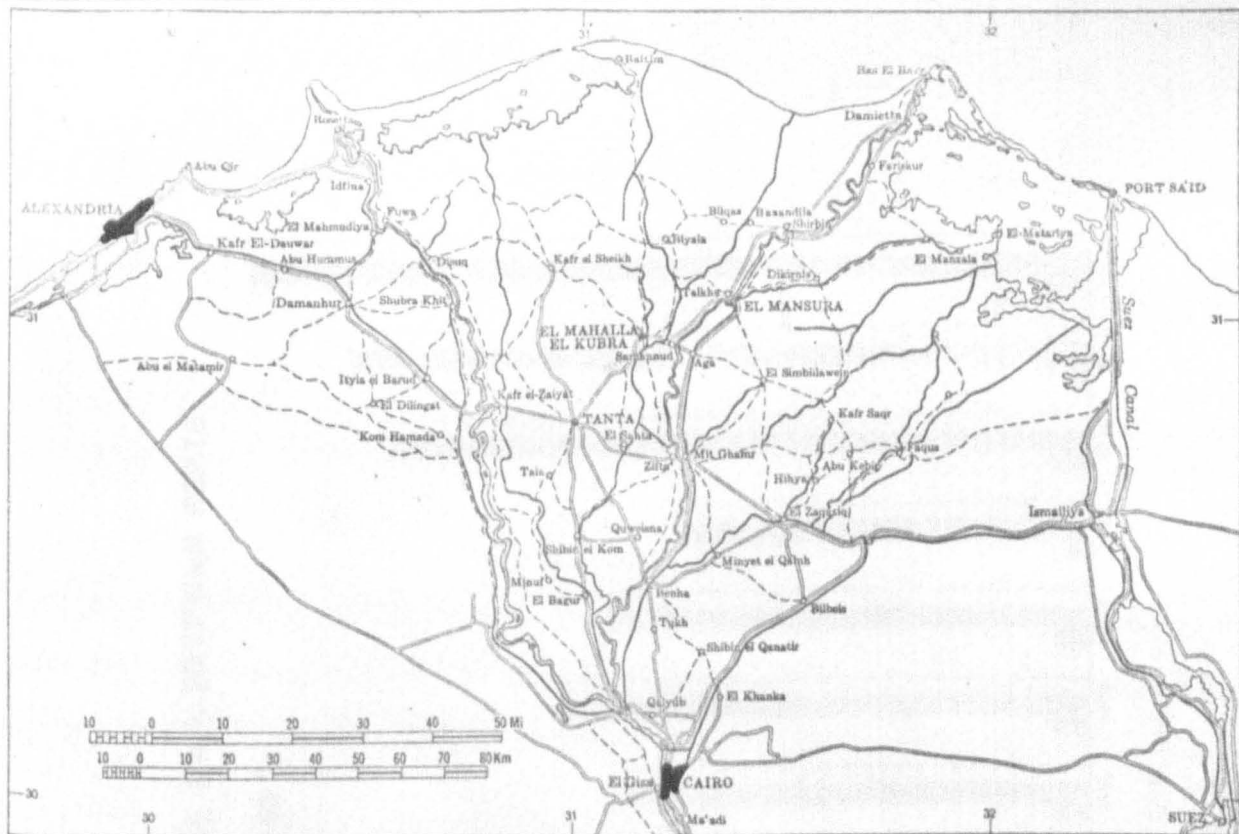
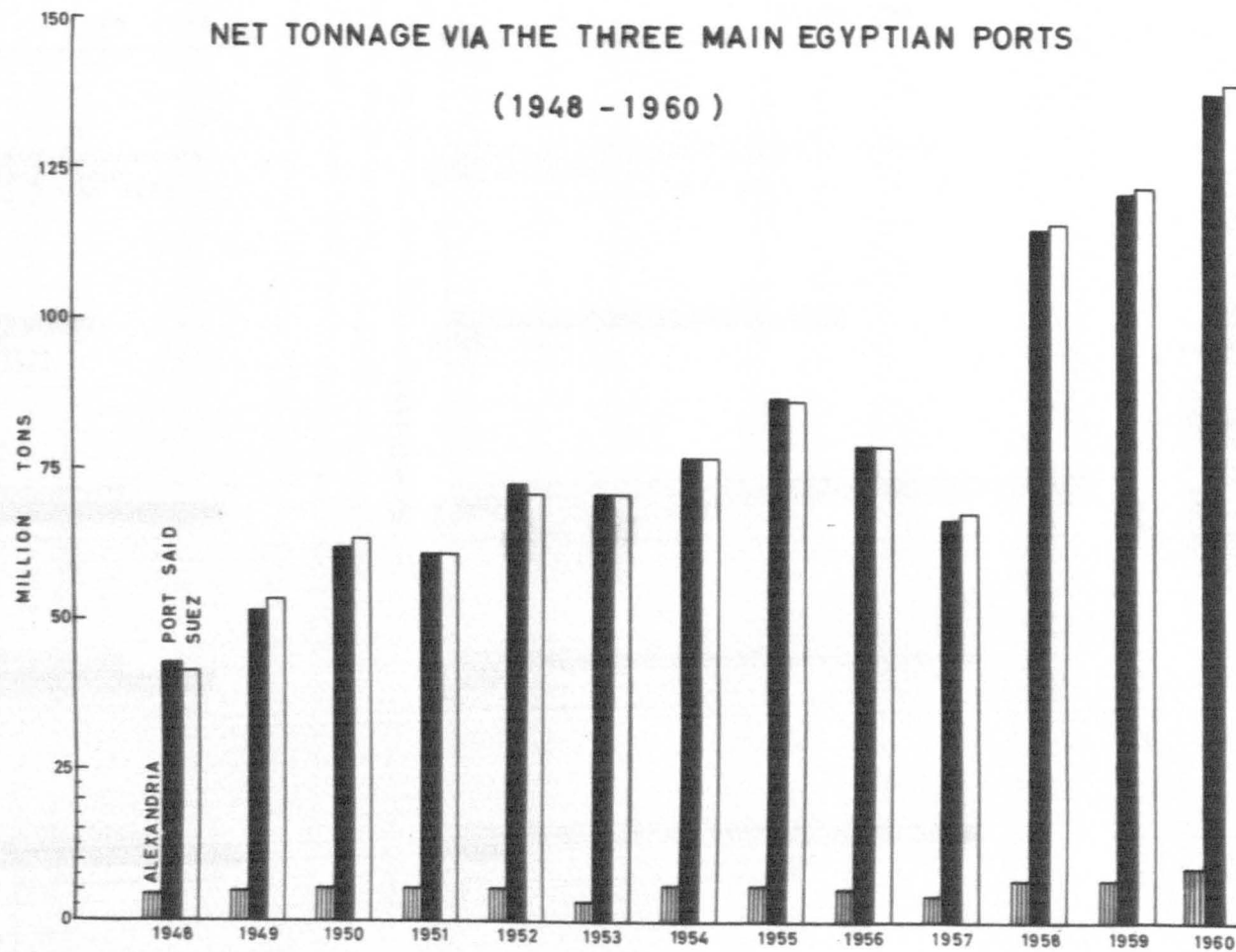


Fig. 41
THE ROADS AND NAVIGABLE CANALS
OF EGYPT

Main roads _____
Secondary roads - - - - -
Navigable canals ————

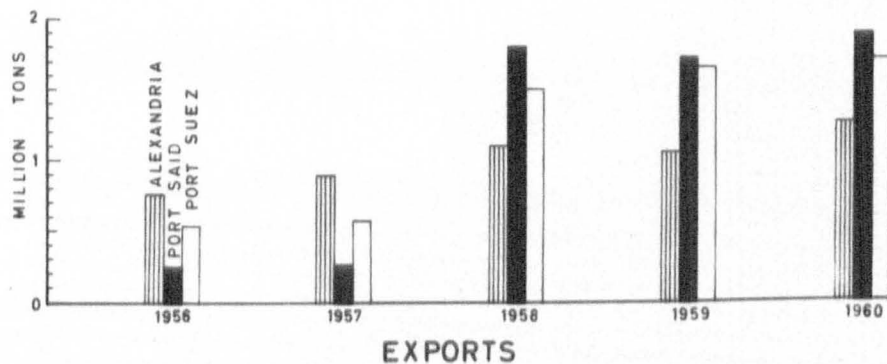
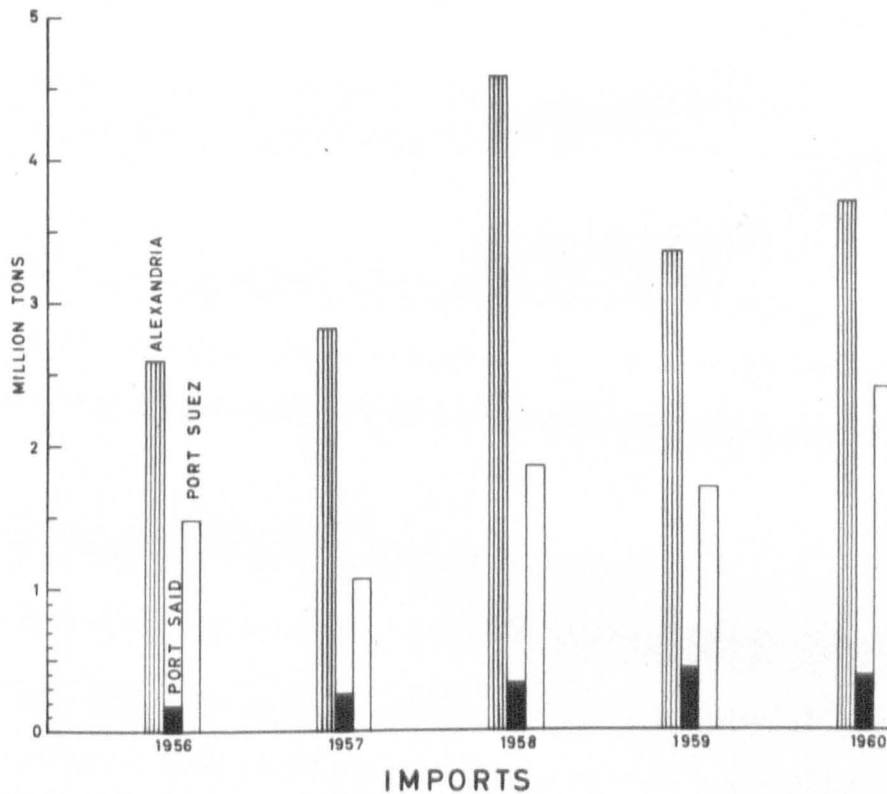


SOURCE. DEPARTMENT OF STAISTICS AND CENSUS

CAIRO 1962

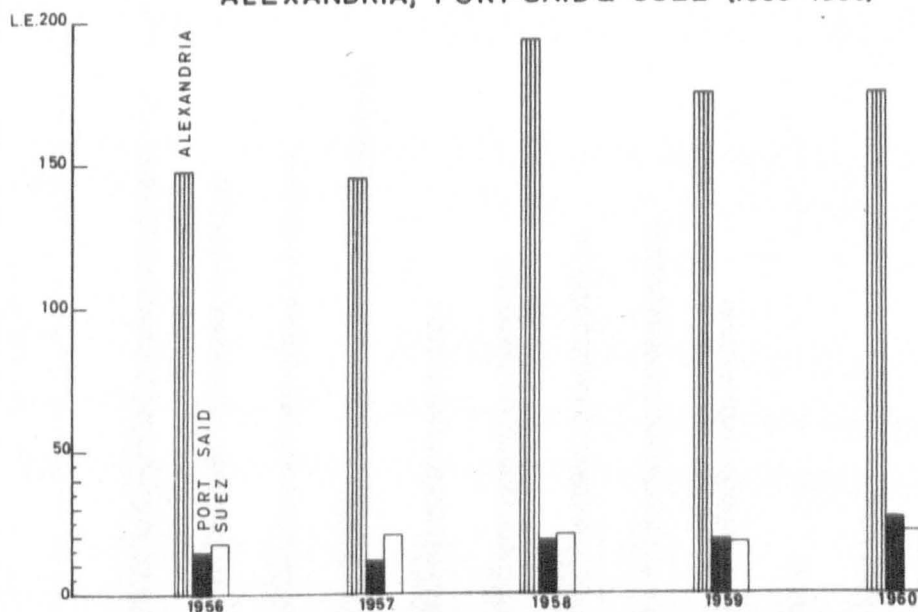
Fig. 42

THE TRADE OF ALEXANDRIA, PORT-SAID & PORT SUEZ (1956 - 1960)

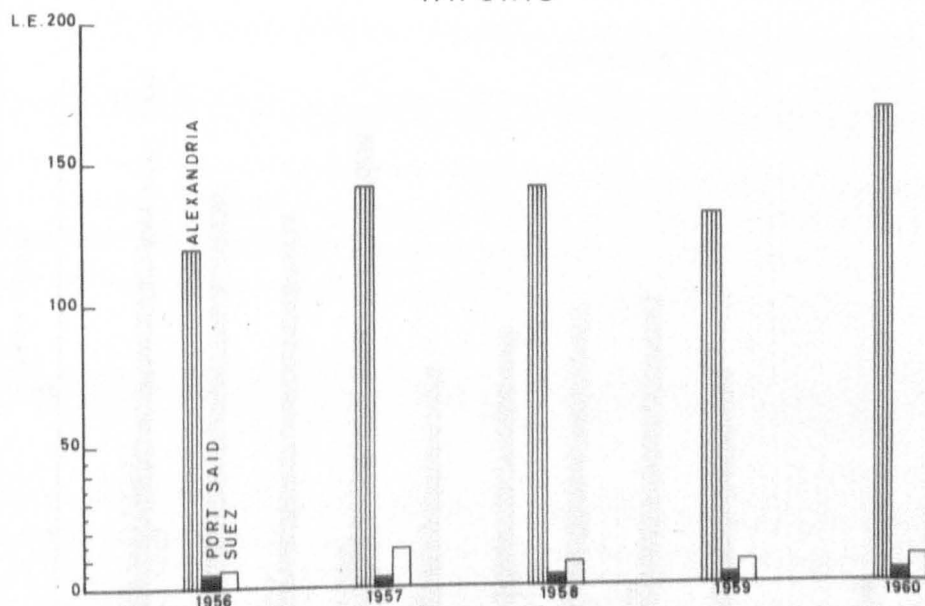


SOURCE: PRESIDENCY OF THE REPUBLIC - STATISTICAL ADMINISTRATION (1956-1960)

THE VALUE OF TRADE THROUGH THE THREE MAIN PORTS ALEXANDRIA, PORT-SAID & SUEZ (1956-1960)



IMPORTS



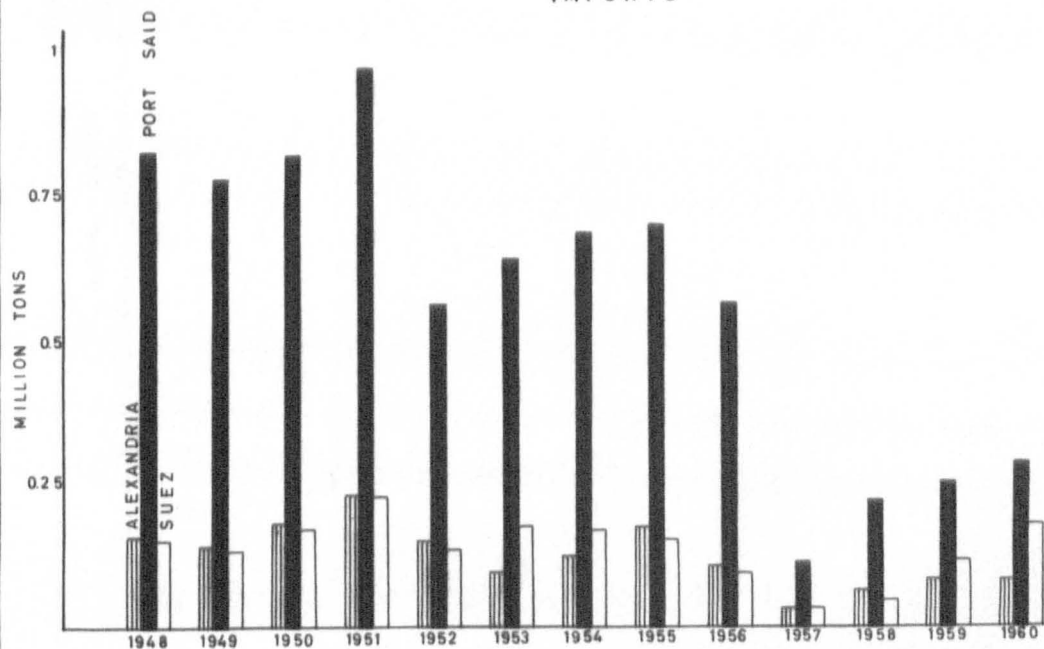
EXPORTS

SOURCE: STATISTICAL ADMINISTRATION
MONTHLY SUMMARY OF FOREIGN TRADE

Fig. 44

TRANSIT TRADE VIA THE THREE EGYPTIAN PORTS(1948 - 1960)

IMPORTS



EXPORTS

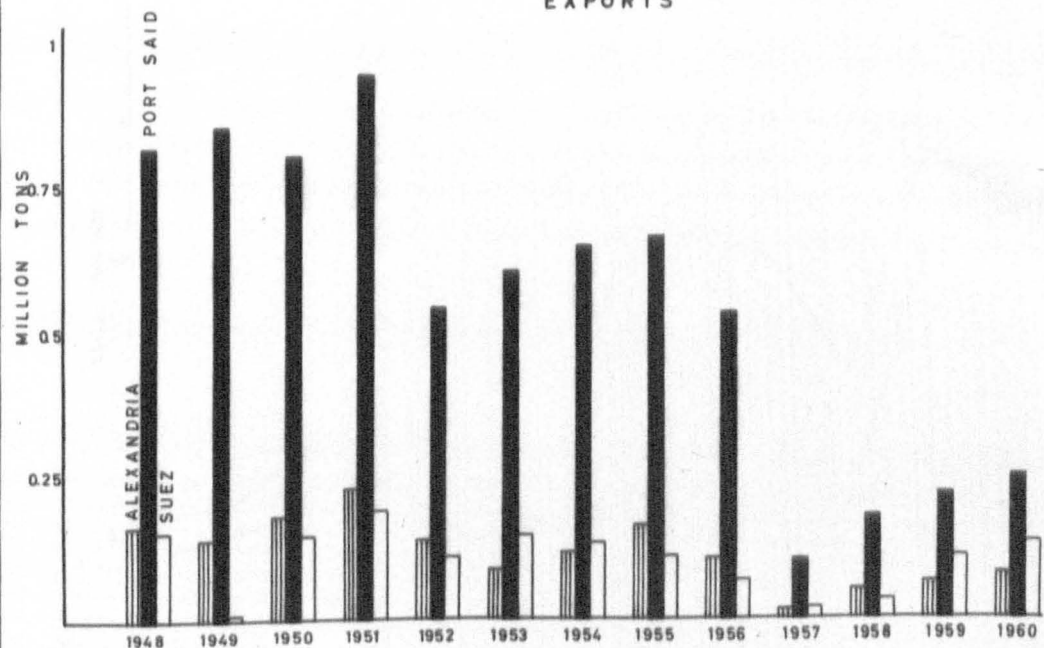


Fig. 45

THE TRADE OF PORT SUEZ (1948 - 1960)

VALUE OF TRADE



VOLUME OF TRADE

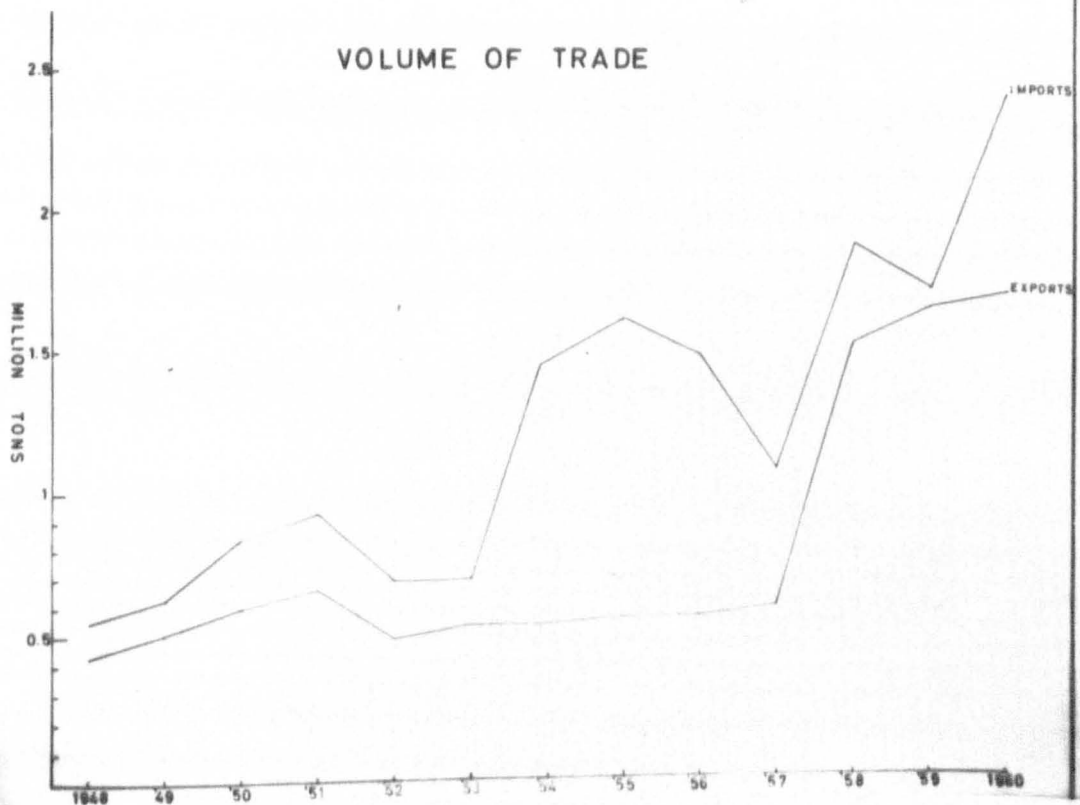


Fig. 46

THE LOCAL HINTERLAND OF SUEZ

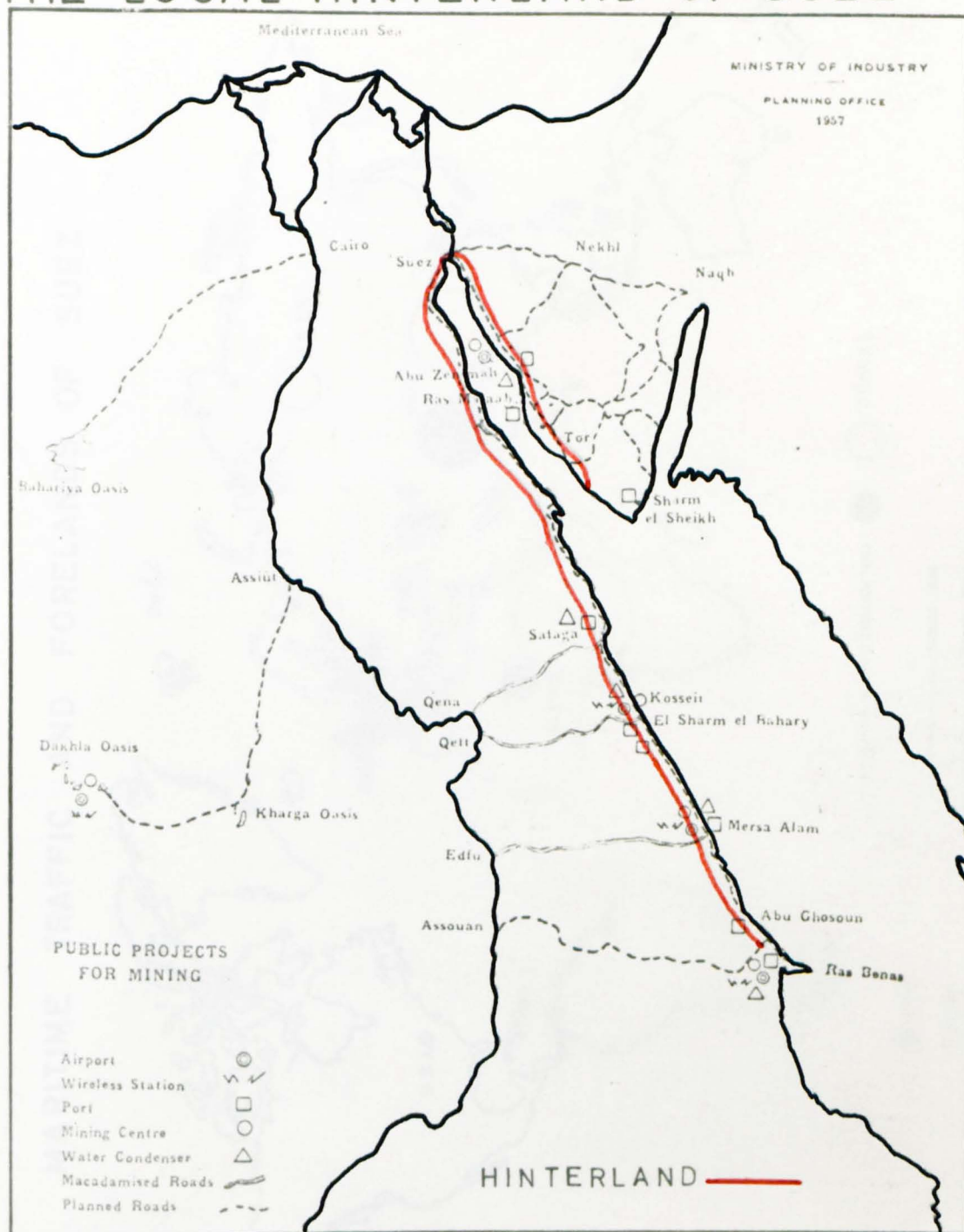


Fig. 47

MARITIME TRAFFIC AND FORELANDS OF SUEZ

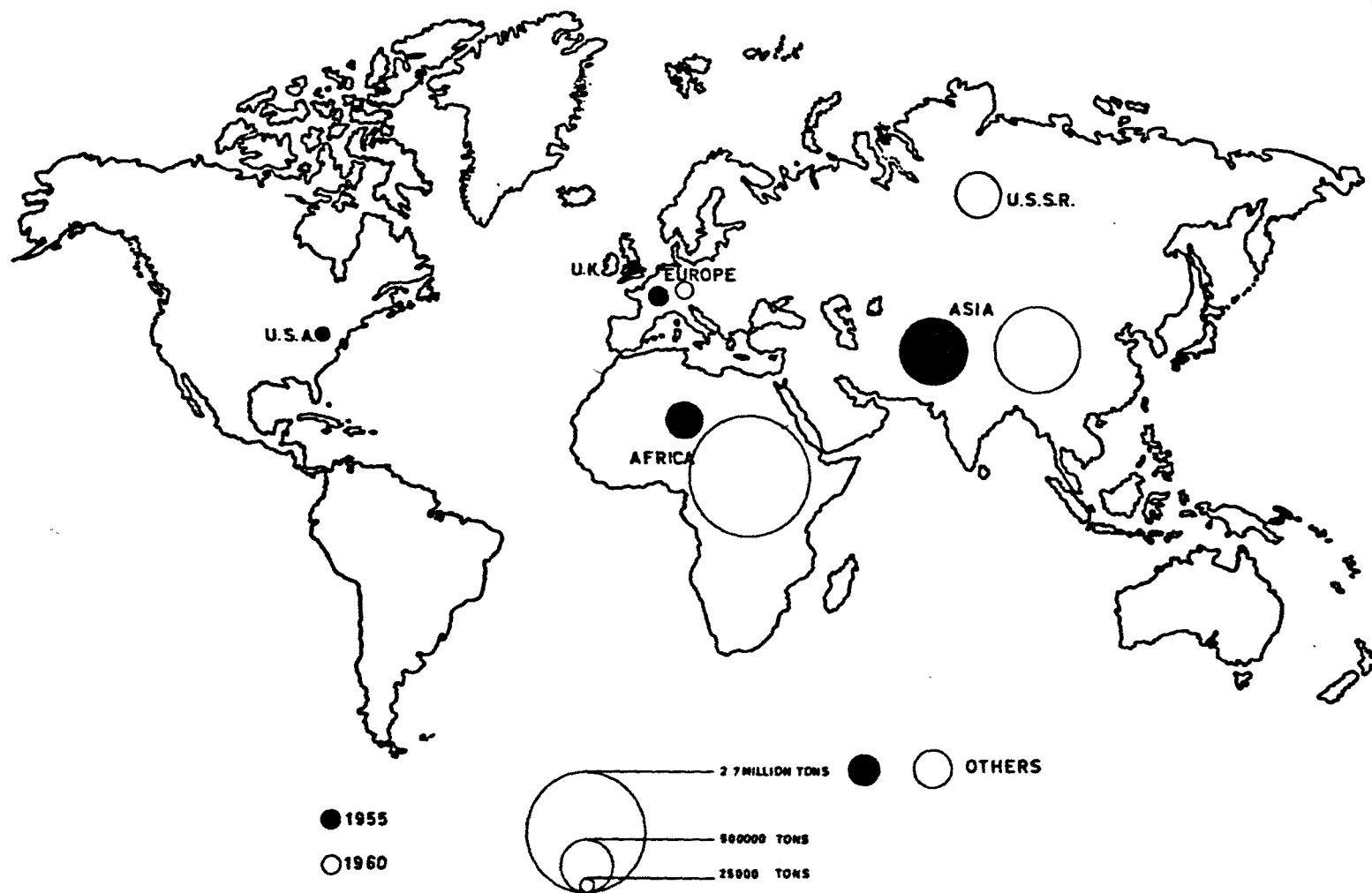


Fig. 48

THE SURROUNDING REGION OF PORT SUDAN

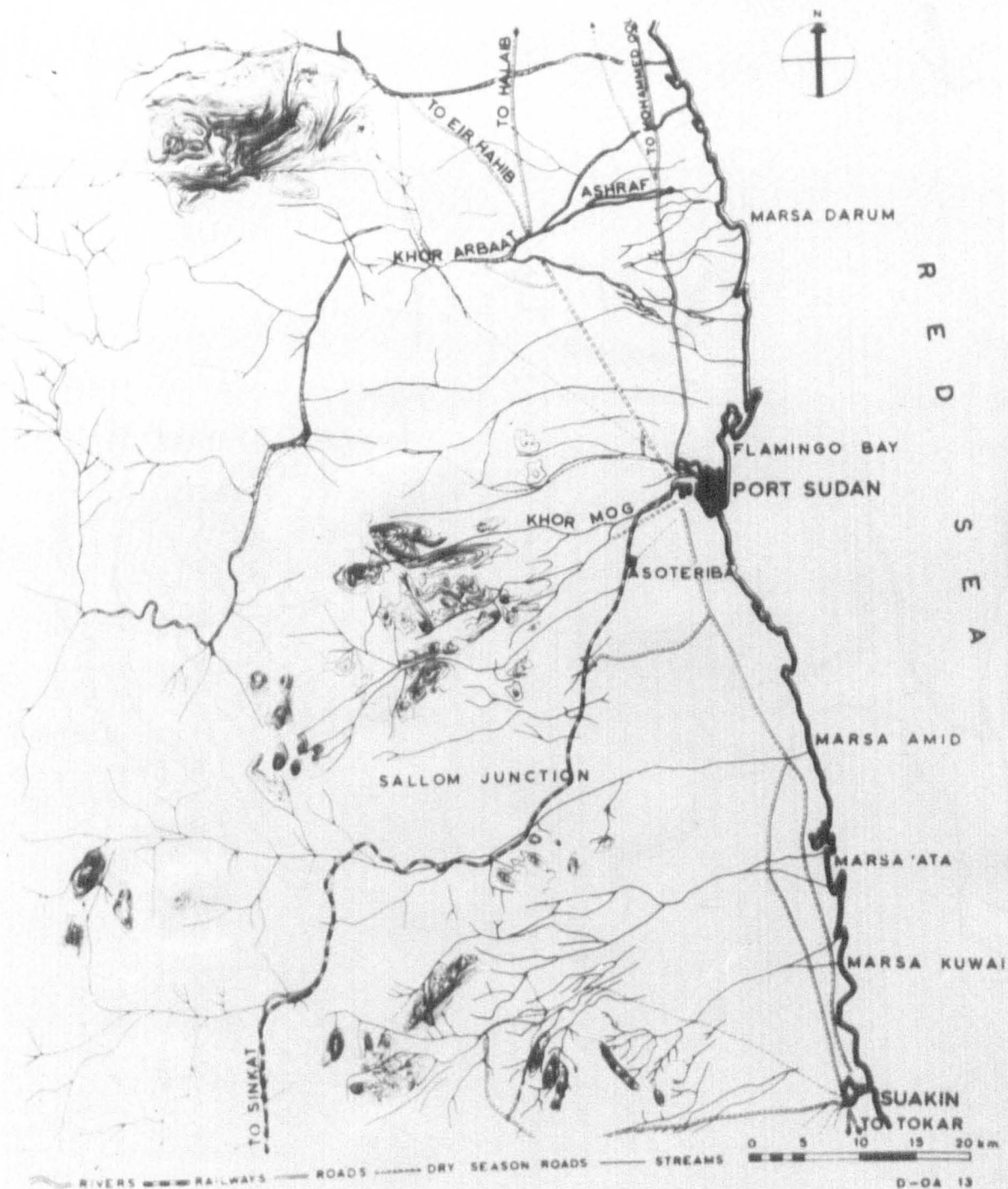
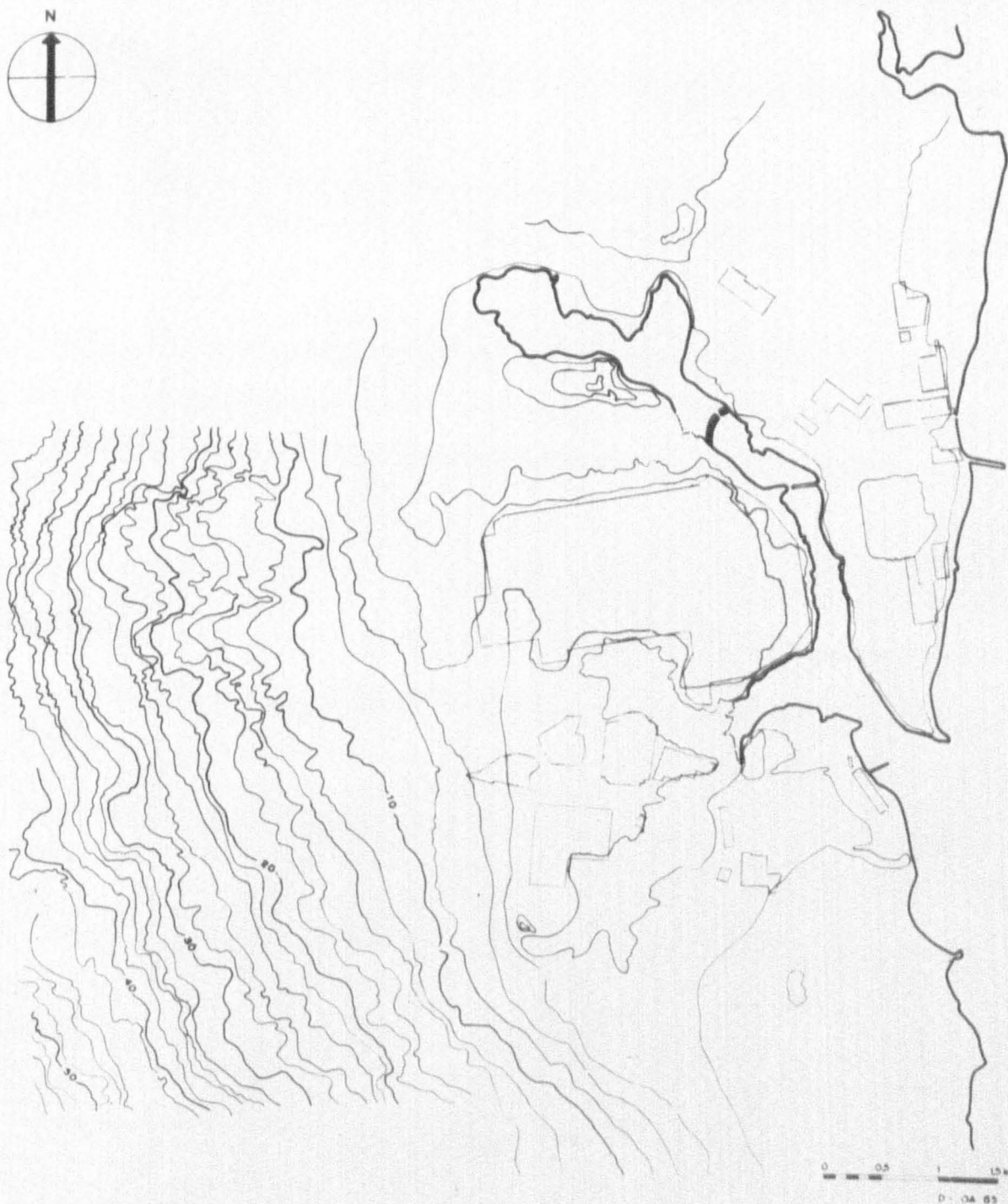


Fig. 49

TOPOGRAPHY



DOXIADIS ASSOCIATES - CONSULTING ENGINEERS

Fig. 50

LOCATION OF BERTHS



Fig. 51

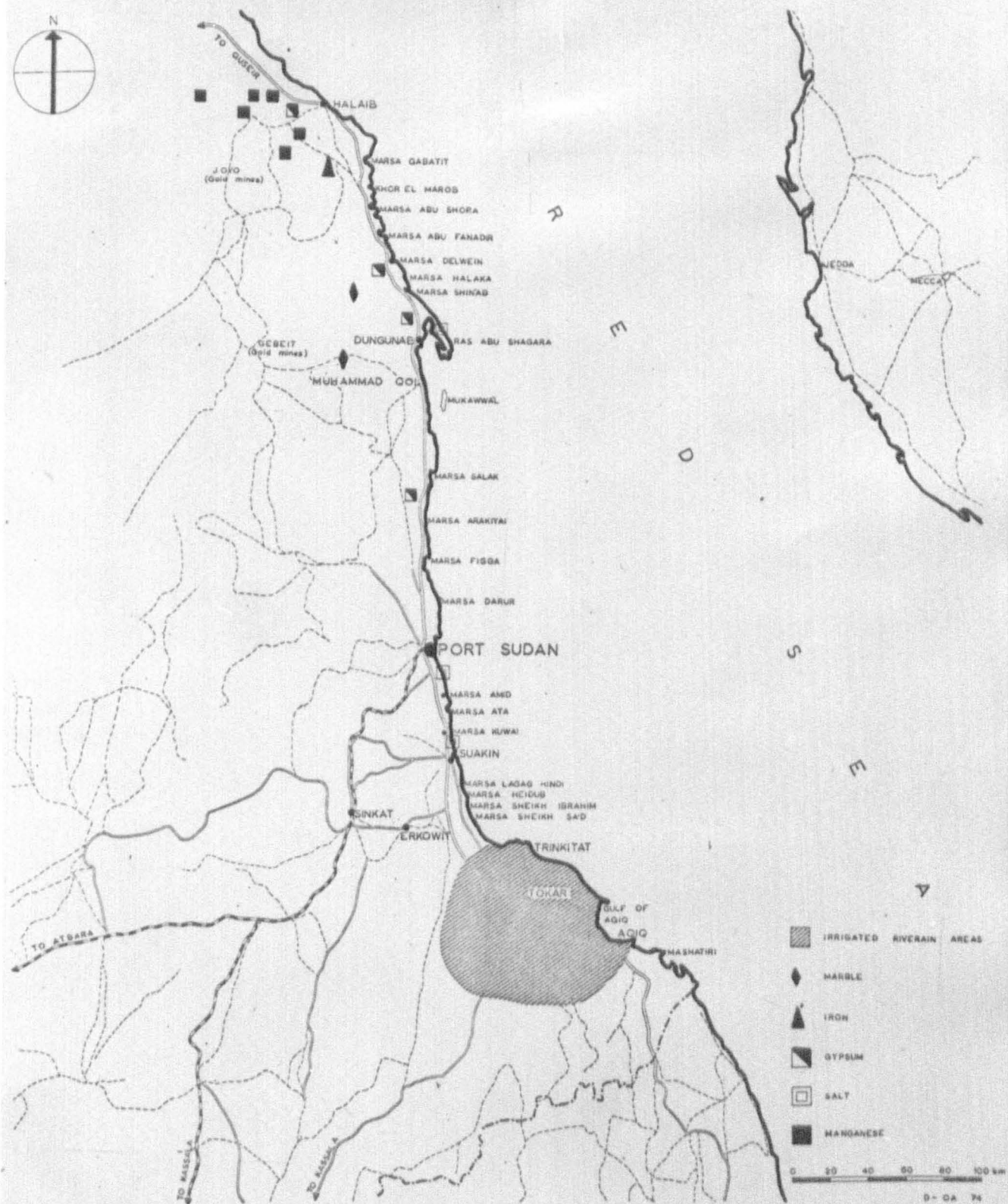
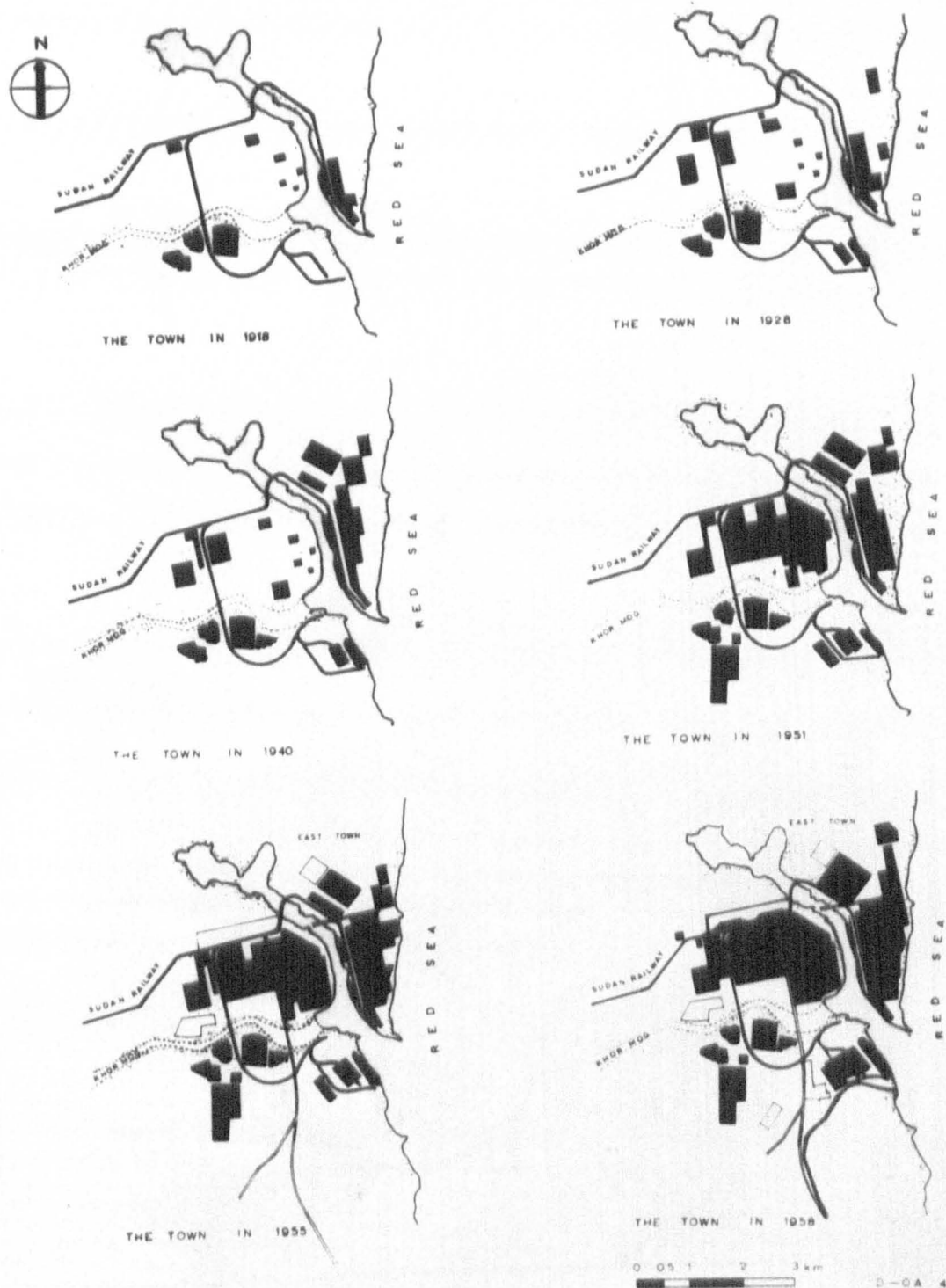


Fig. 52

THE GROWTH OF PORT SUDAN



DOXIADIS ASSOCIATES - CONSULTING ENGINEERS

Fig. 53

PORT SUDAN (1960)

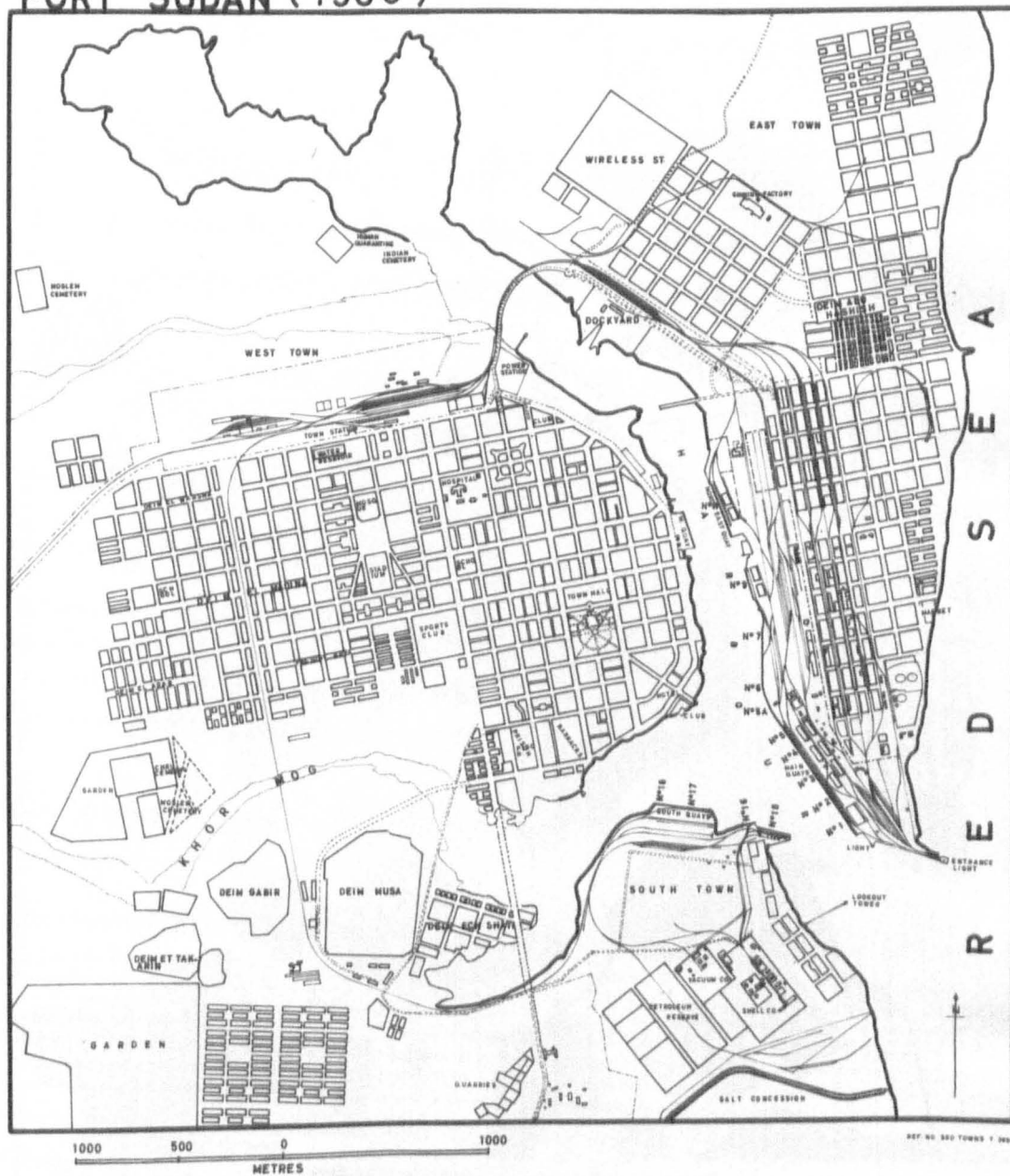


Fig. 54

PORT SUDAN: URBAN FUNCTIONS

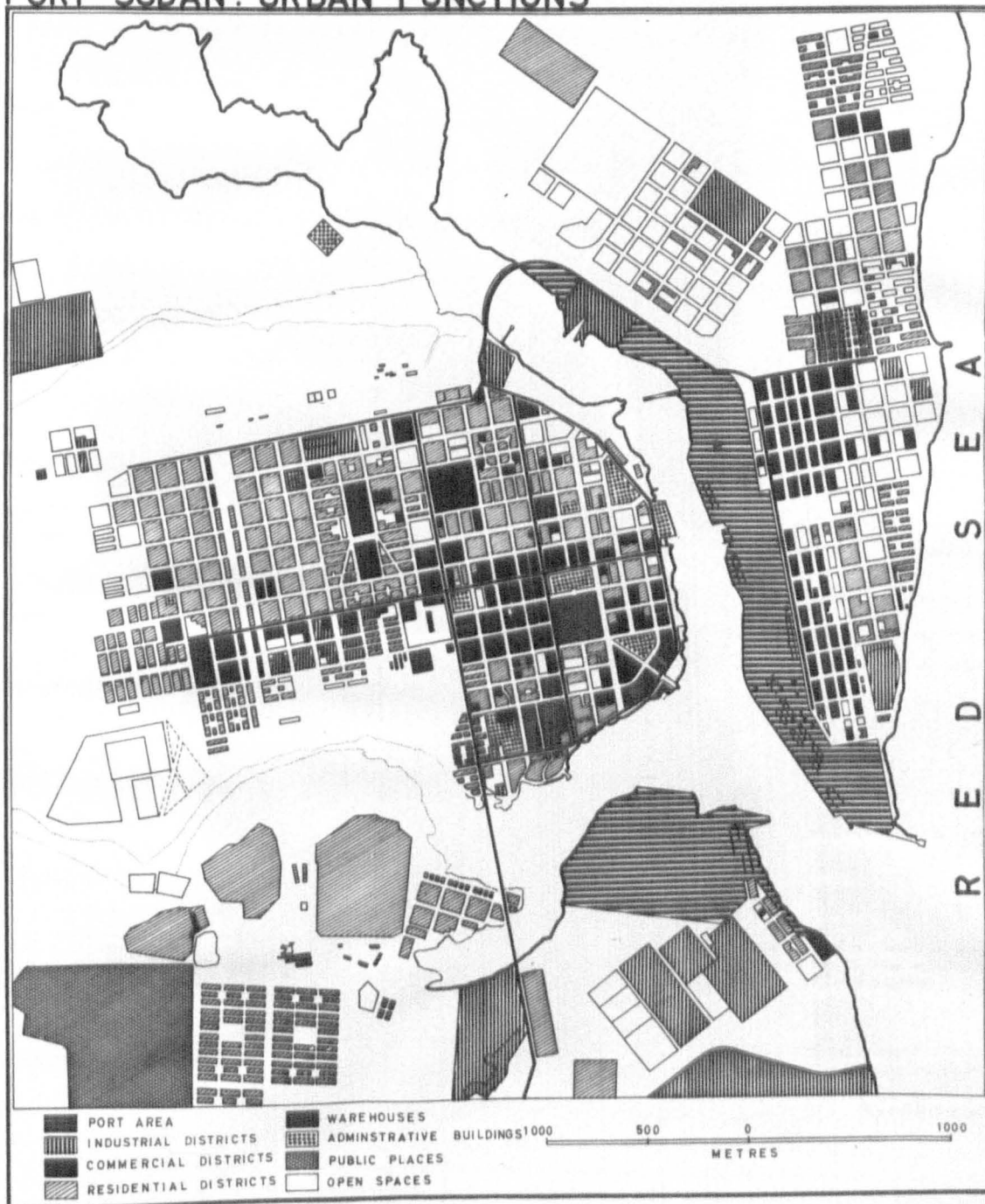
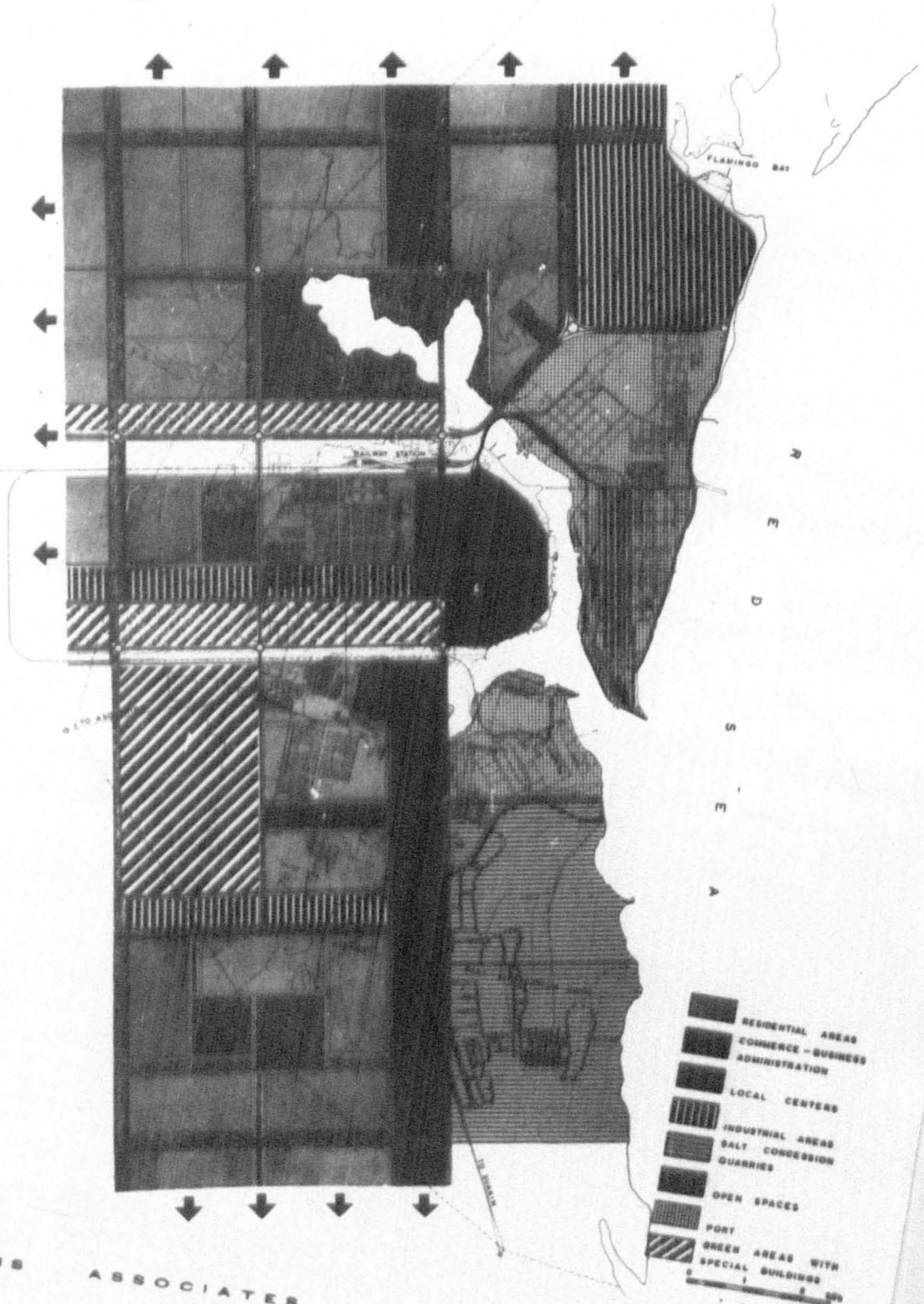


Fig. 55

MASTER PLAN POSSIBILITIES FOR FURTHER EXPANSIONS



DOXIADIS ASSOCIATES - CONSULTING ENGINEER

Fig. 56

DISTRIBUTION OF THE SETTLEMENTS ALONG THE RED SEA (SUDAN)

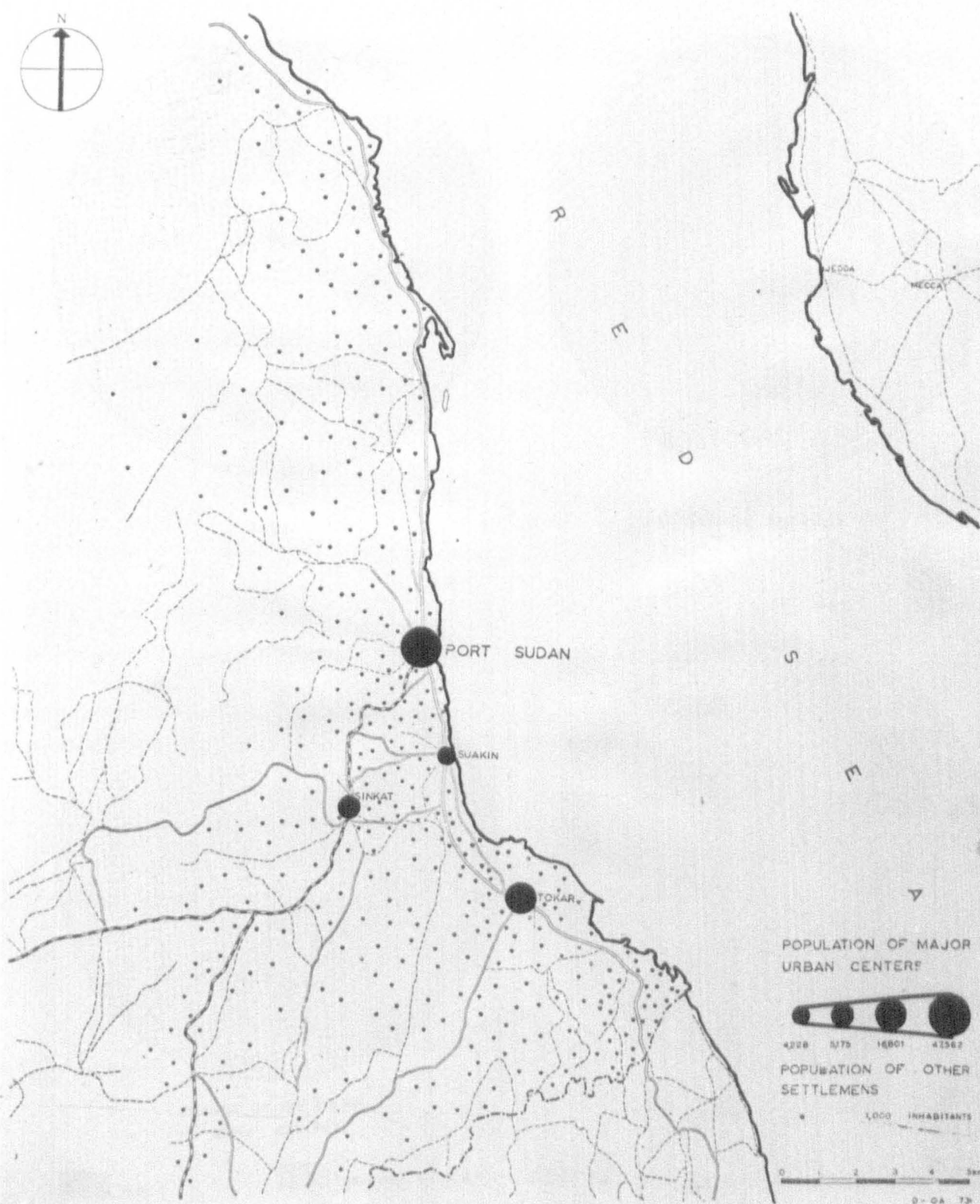
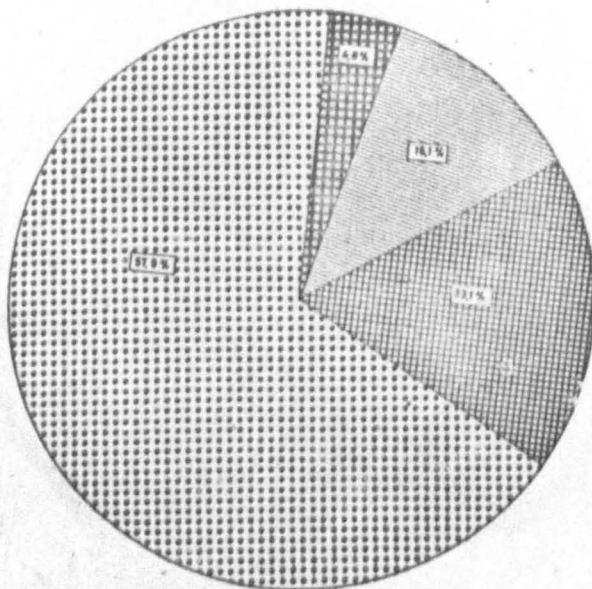
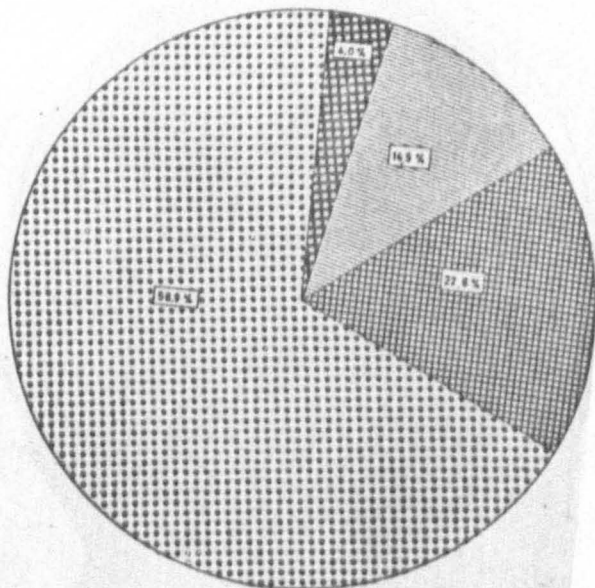


Fig. 57

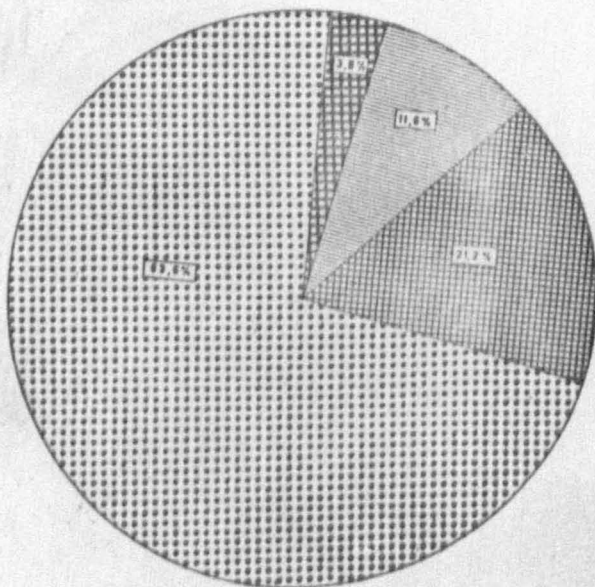
AGE GROUPS OF THE POPULATION



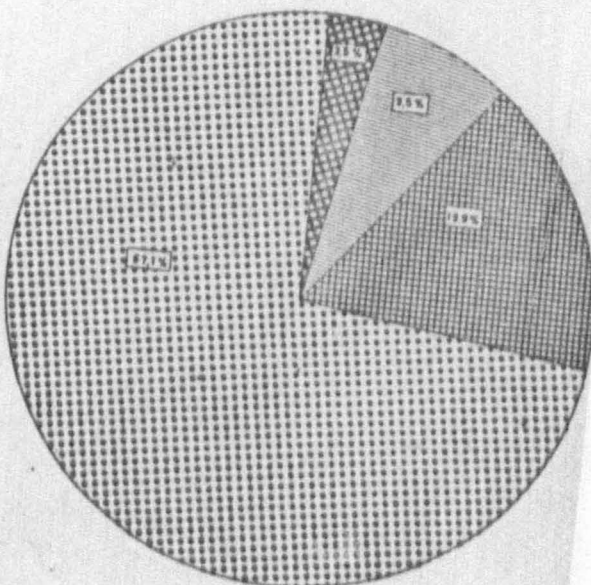
SUDAN



KASSALA PROVINCE



AVERAGE OF THE MAJOR
URBAN CENTRES



PORT SUDAN





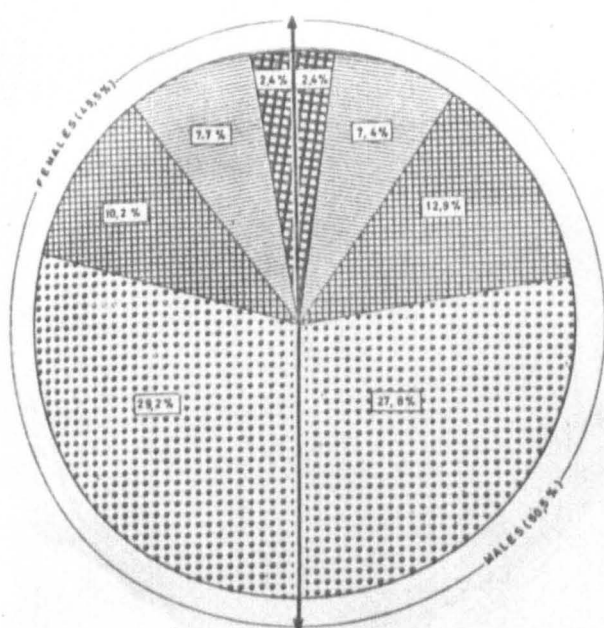
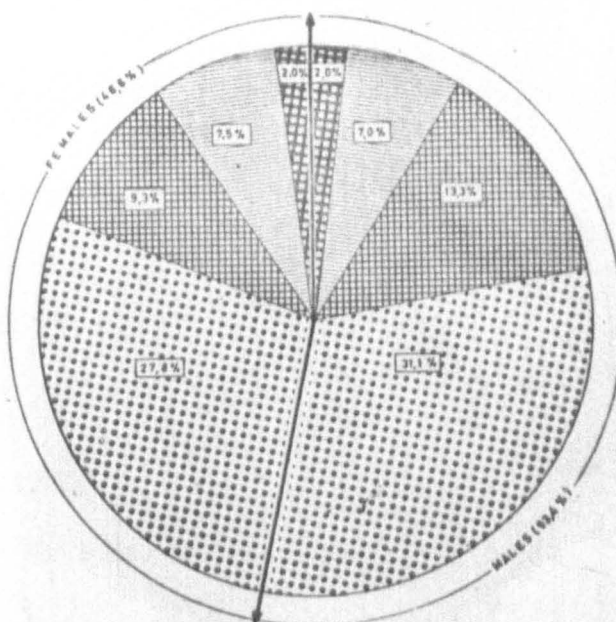
 Under 1
  1 and over to under 5
  5 and over to under puberty
  Over puberty

Fig. 58

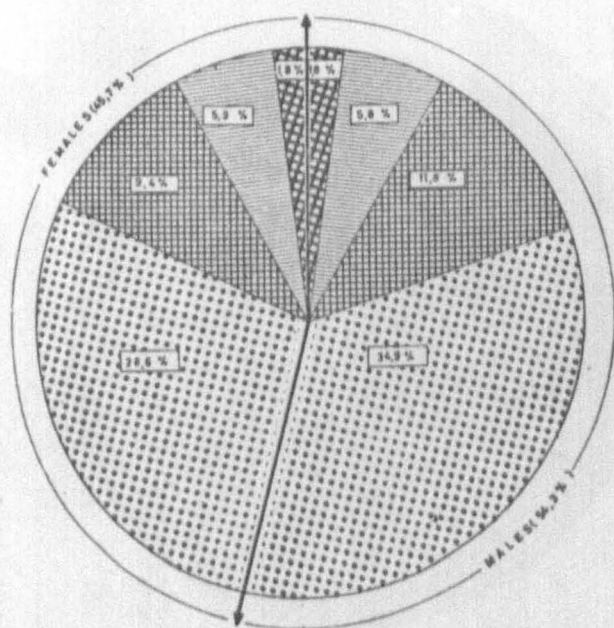
POPULATION STRUCTURE BY AGE AND SEX



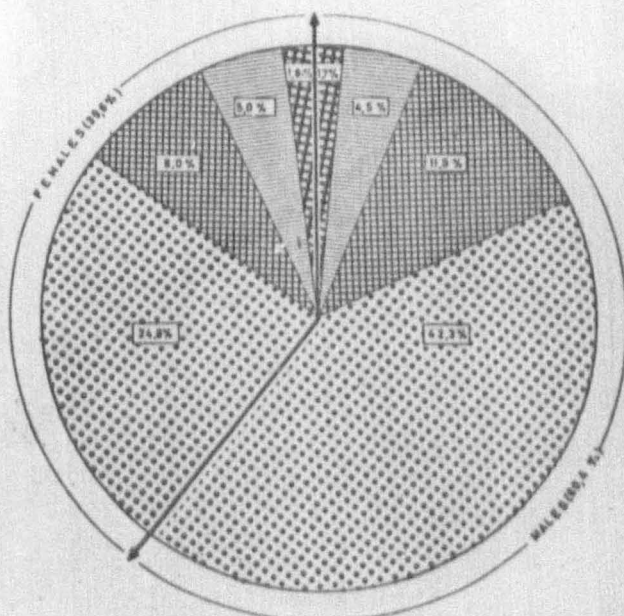
SUDAN



KASSALA PROVINCE



AVERAGE OF THE MAJOR
URBAN CENTRES



PORT SUDAN





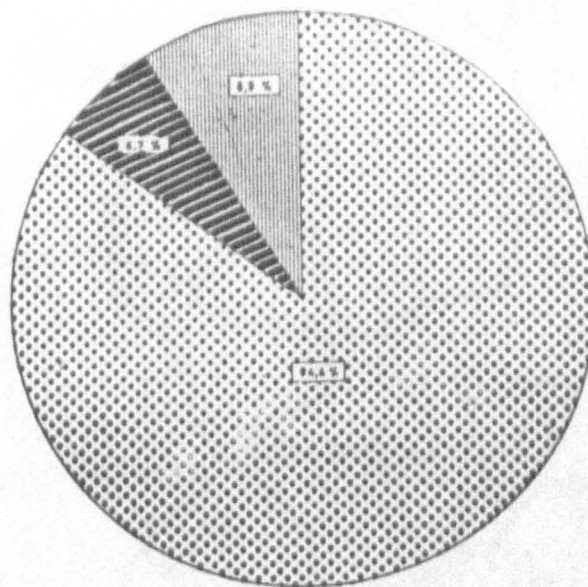
 Under 1
  1 and over to under 5
  5 and over to under puberty
  Over puberty

Fig. 59

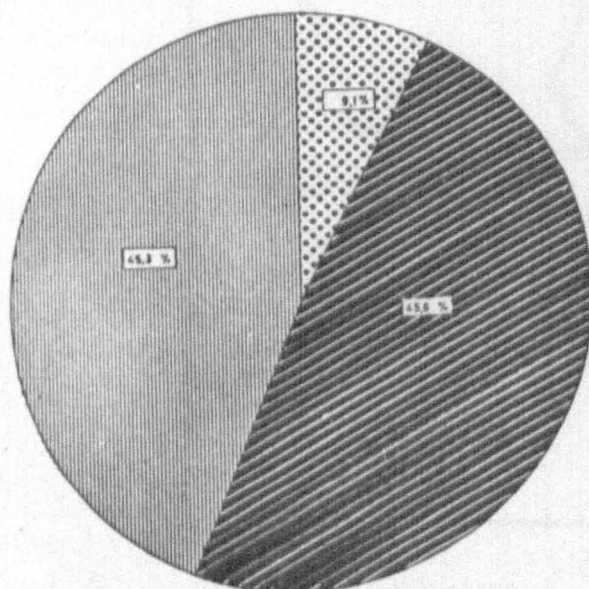
WORK FORCE STRUCTURE



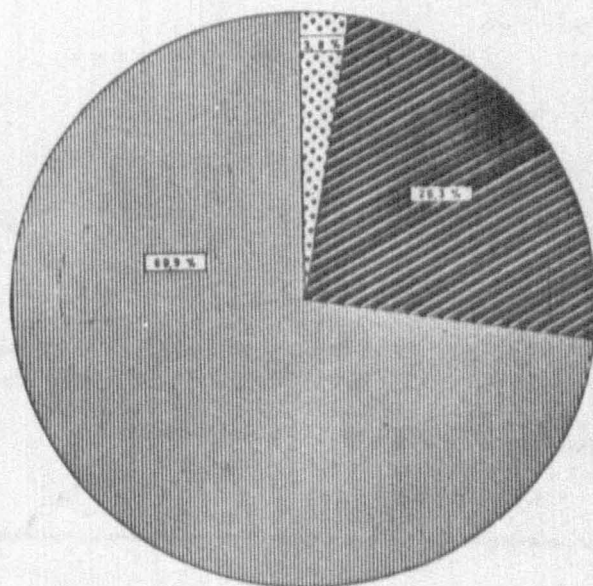
SUDAN




KASSALA PROVINCE




AVERAGE OF THE MAJOR URBAN CENTRES



PORT SUDAN

 Primary production

 Secondary production


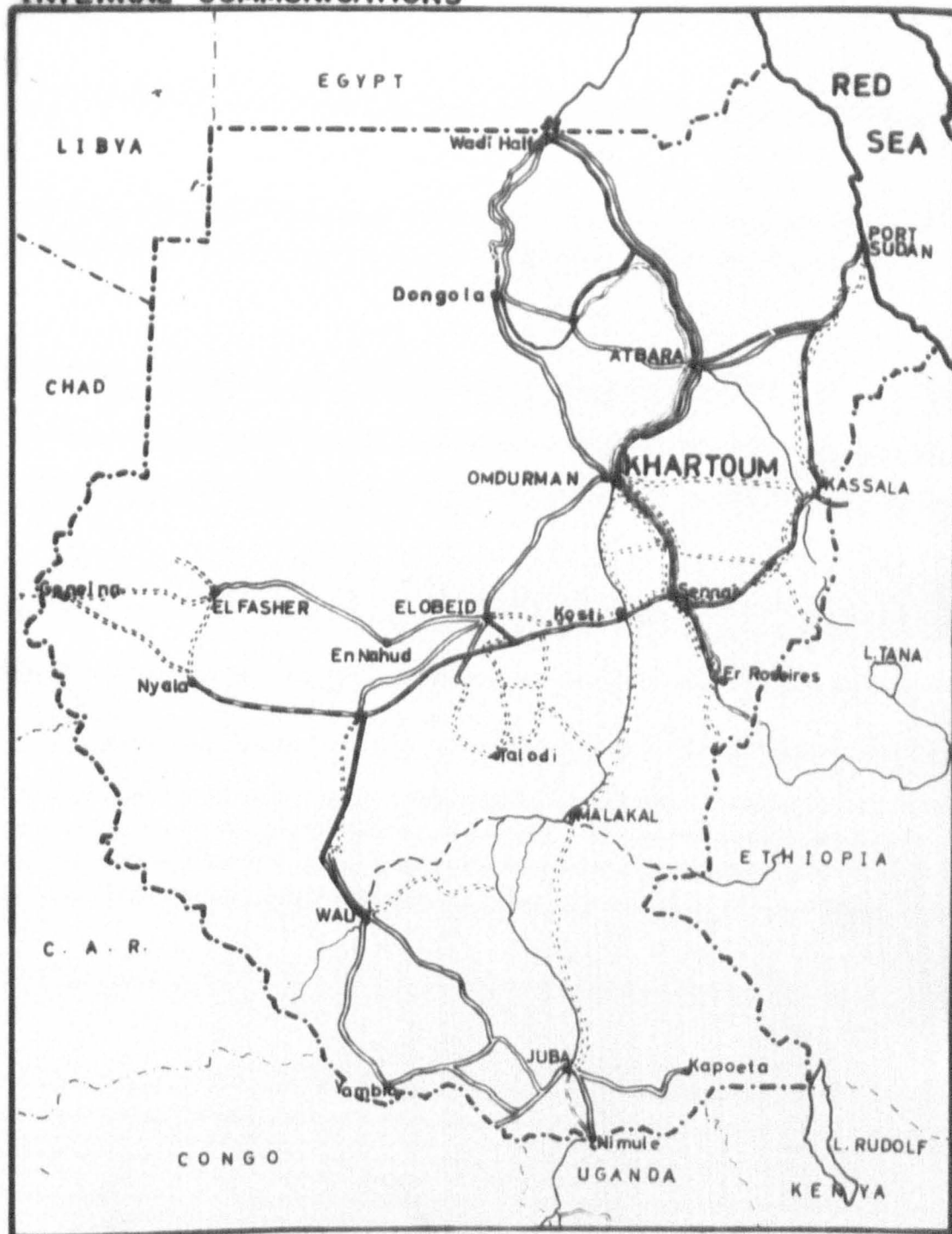
 Tertiary production

Fig. 60

THE SUDAN

INTERNAL COMMUNICATIONS



PRINCIPAL MOTORABLE
ROADS

===== ALL SEASONS
----- SEASONAL

STEAMER SERVICES

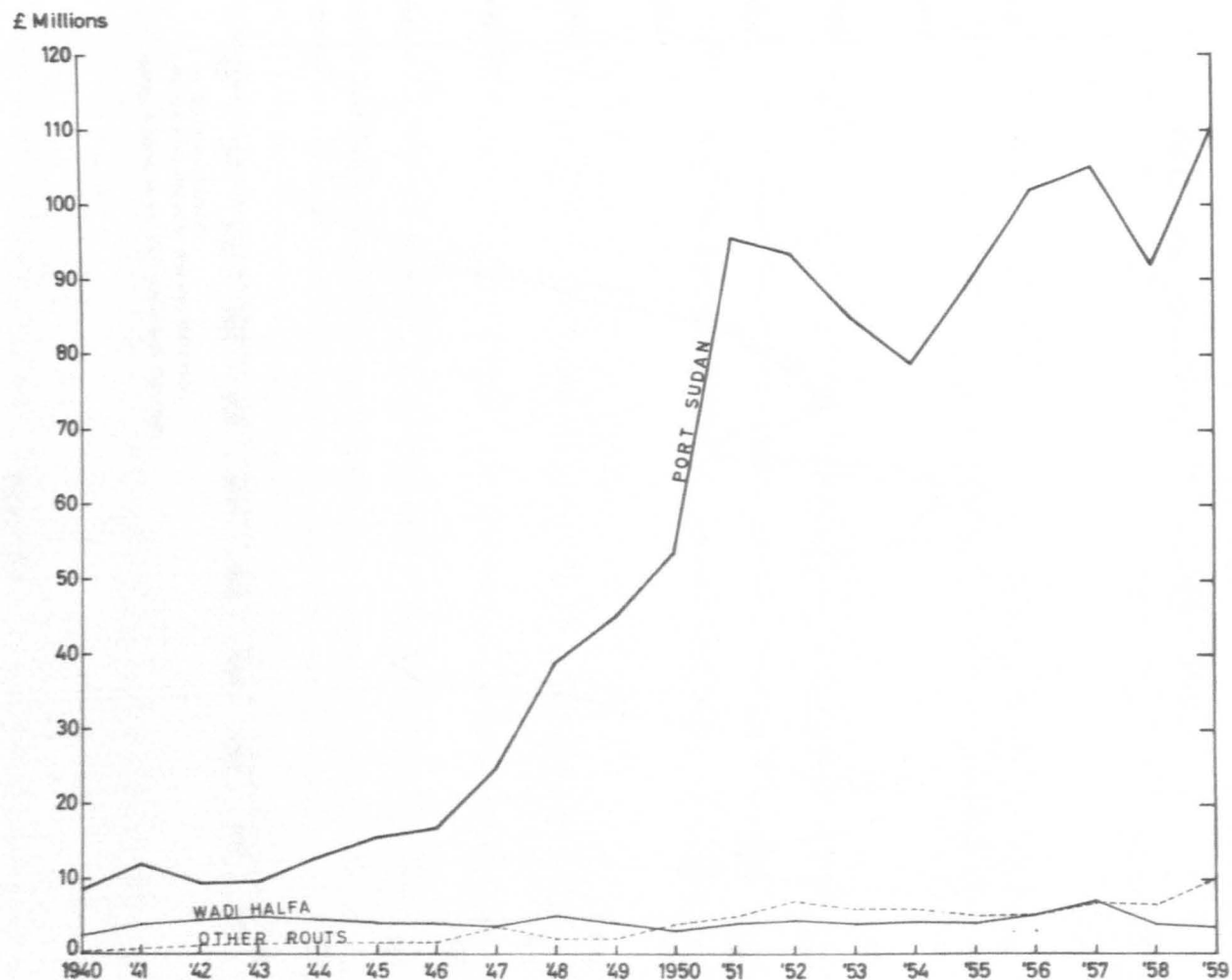
—— ALL SEASONS
- - - SEASONAL

===== RAILWAYS

200 MILES
300 KMS

Fig. 61

TRADE ROUTES IN THE SUDAN (1940 - 1959)



Source: Department of Statistics: Annual Foreign Trade Reports, Khartoum

Fig. 62

PORT SUDAN ANNUAL GROWTH OF PORT TRAFFIC

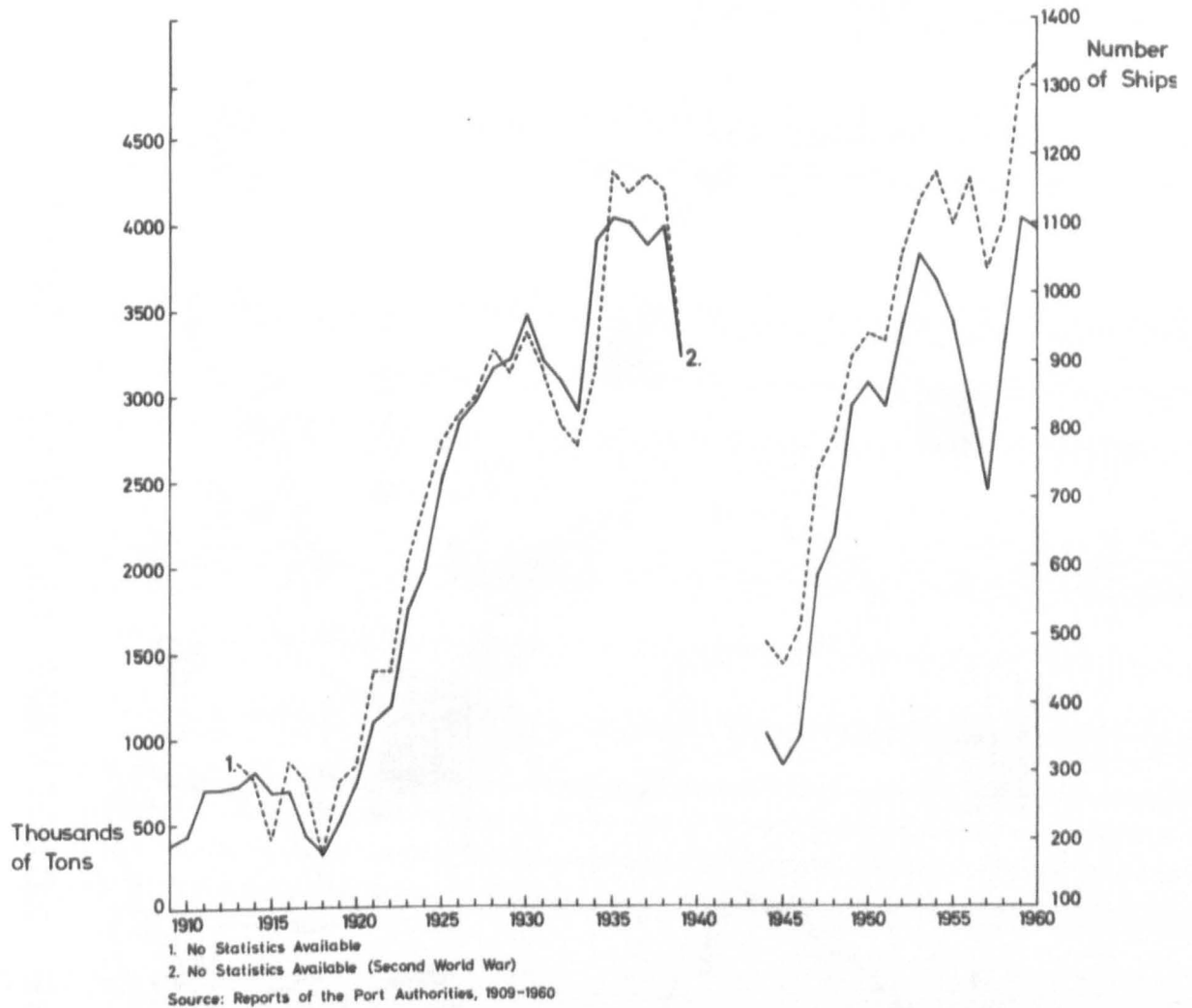


Fig. 63

THE FORELANDS OF PORT SUDAN

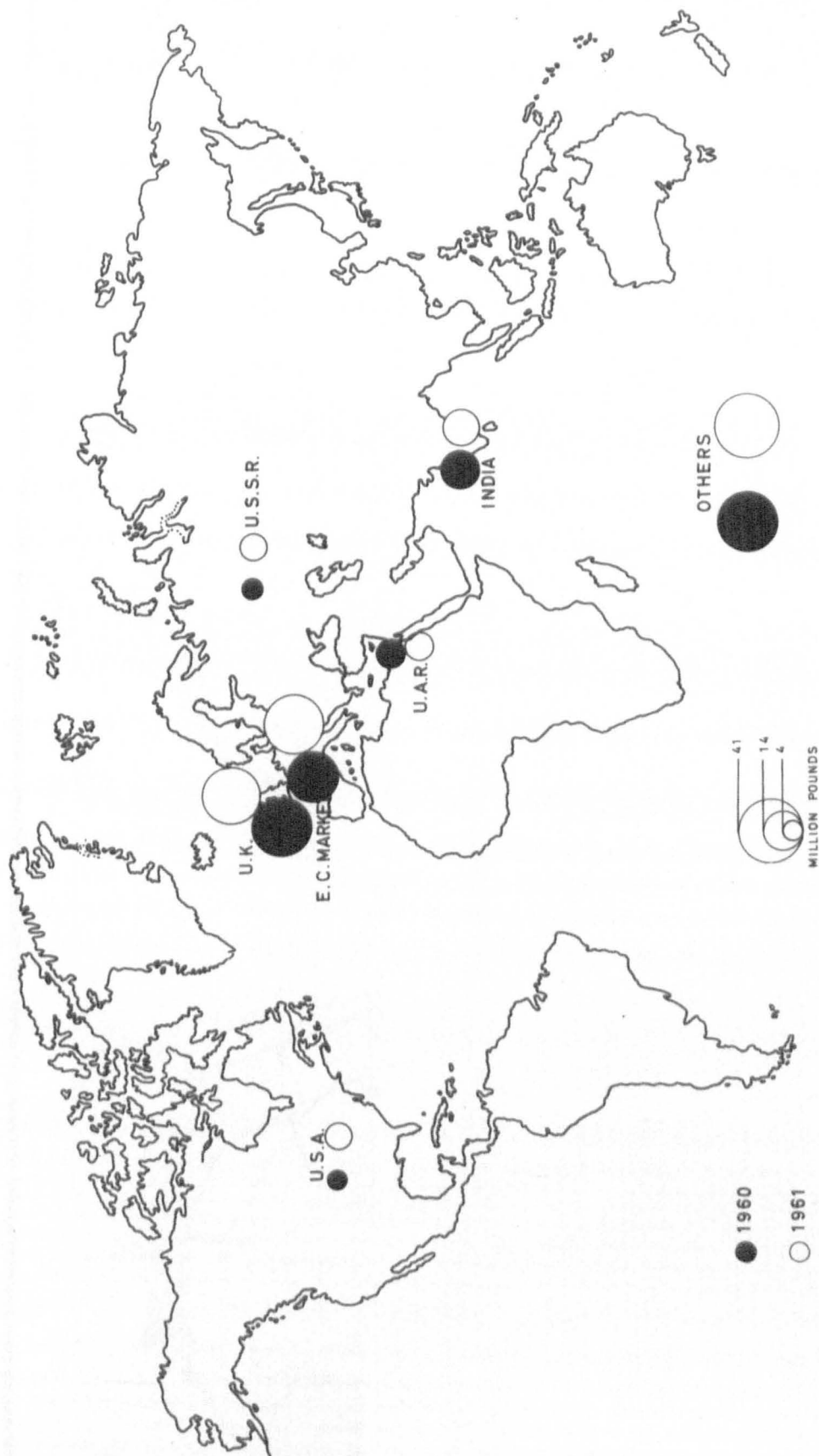


Fig. 64

MASSAWA HARBOUR



SOURCE: BRITISH ADMIRALTY CHART N° 460

SOUNDINGS IN FATHOMS

Fig. 65

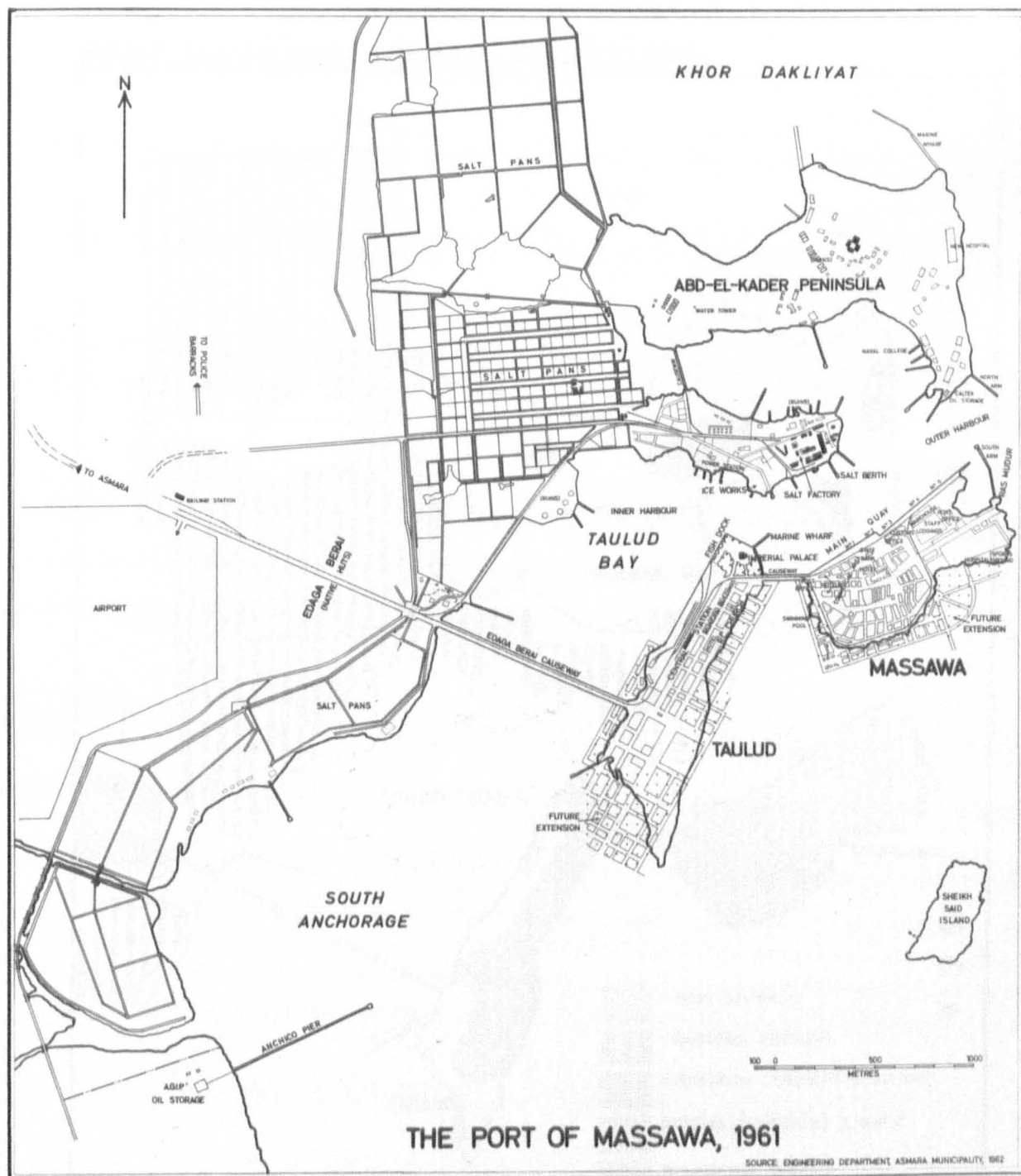


Fig. 66

PORT MASSAWA: URBAN FUNCTIONS

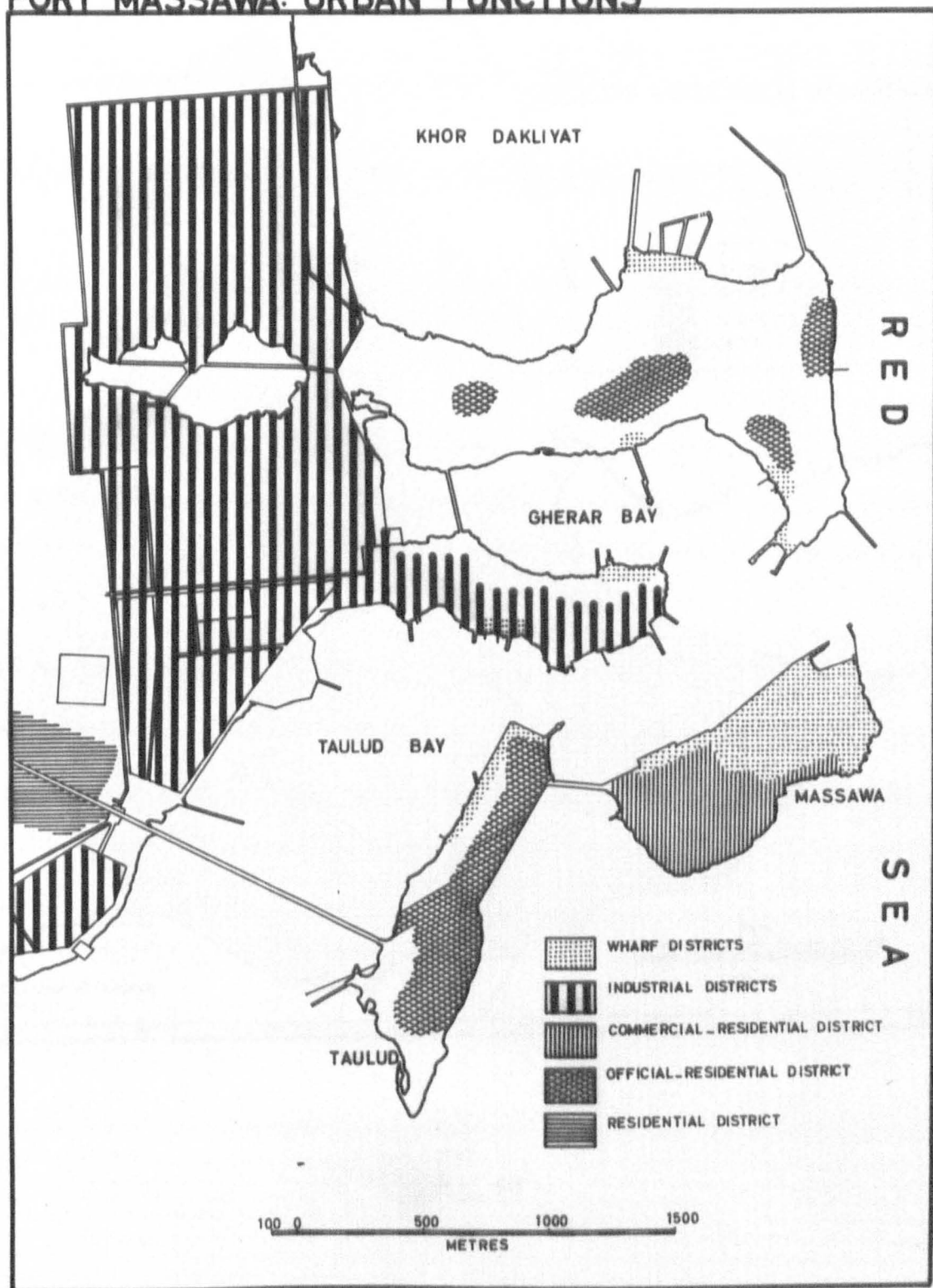
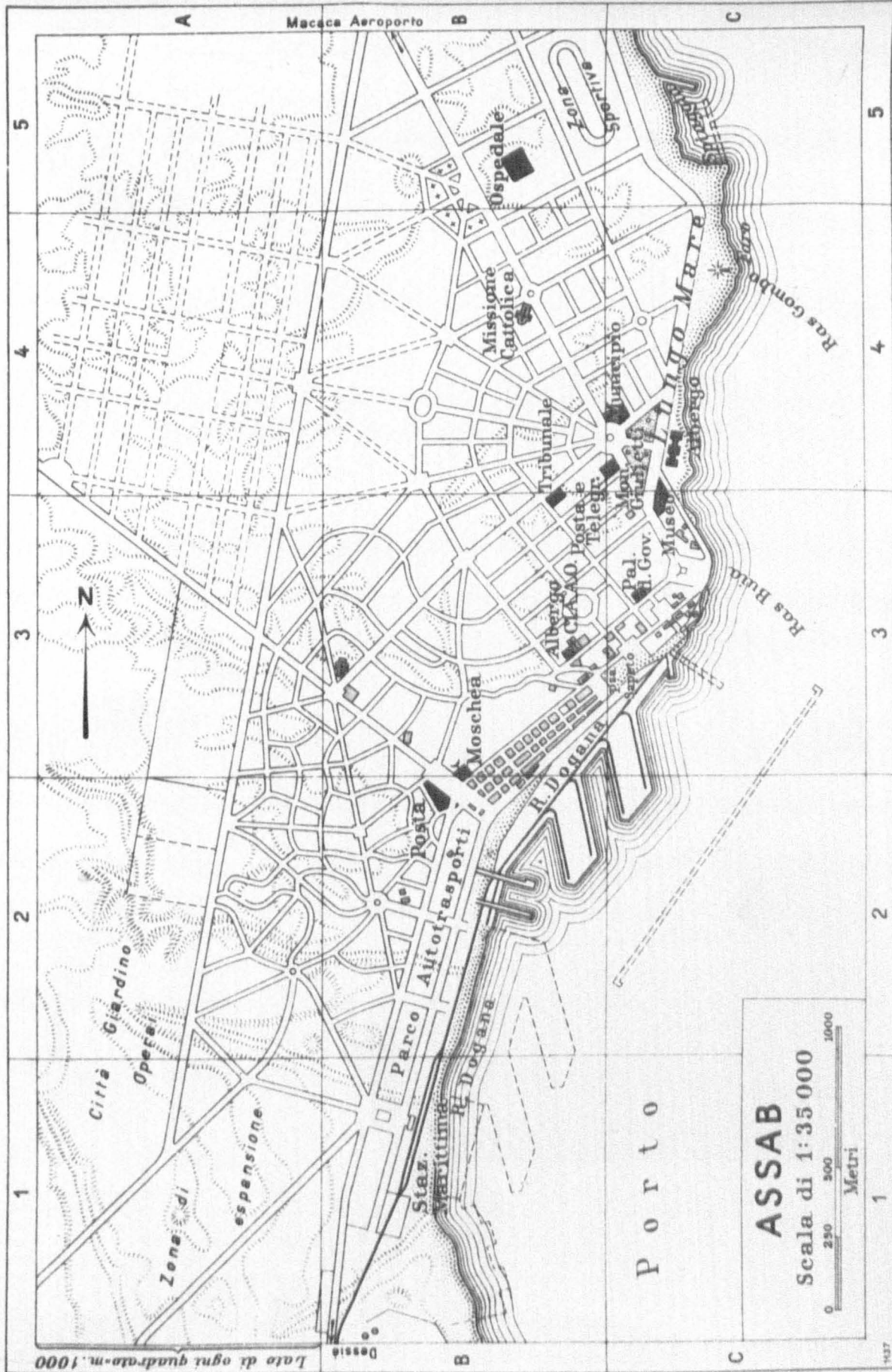


Fig. 67



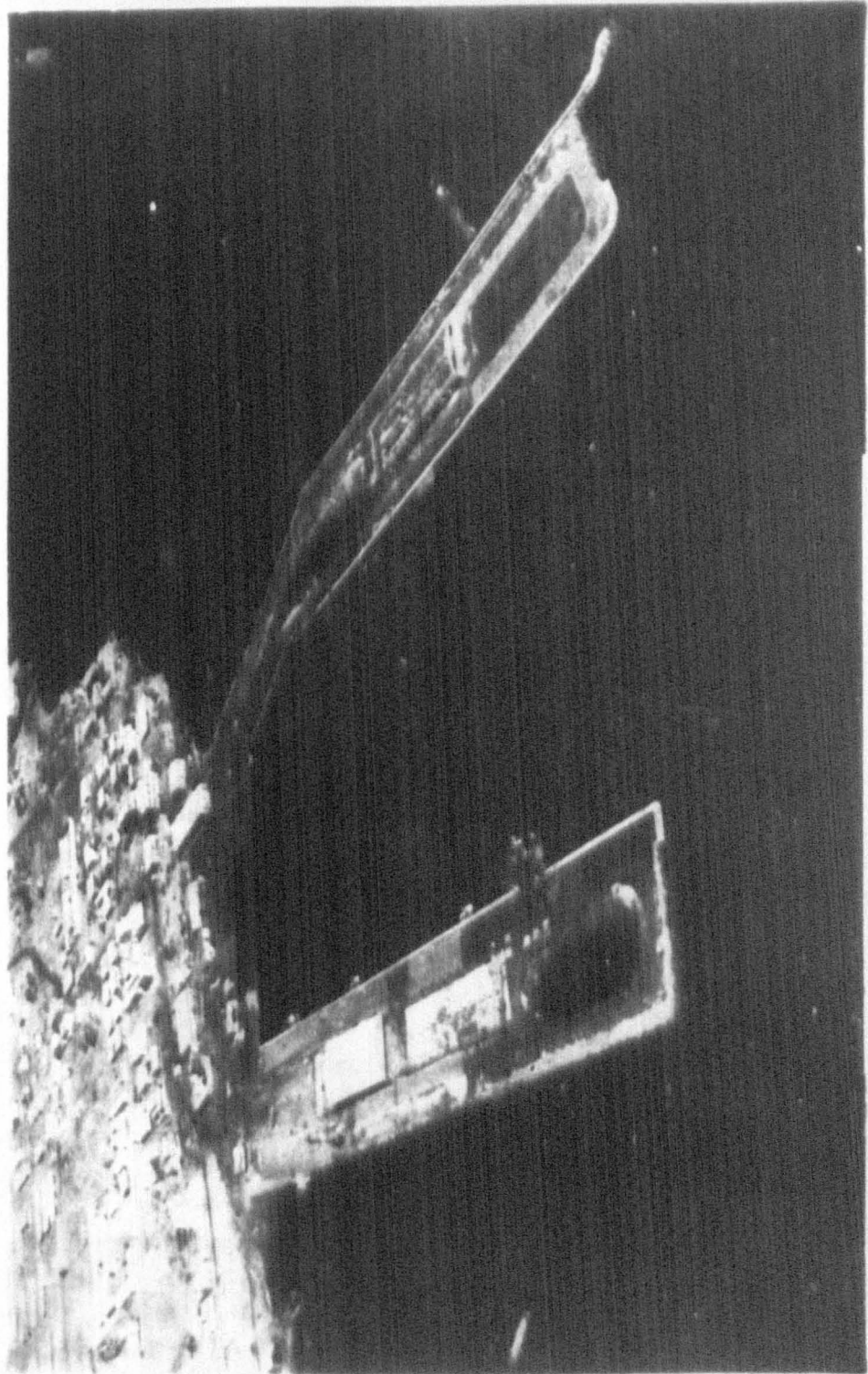


Fig. 70

Aerial View of Port of Assab while under construction.

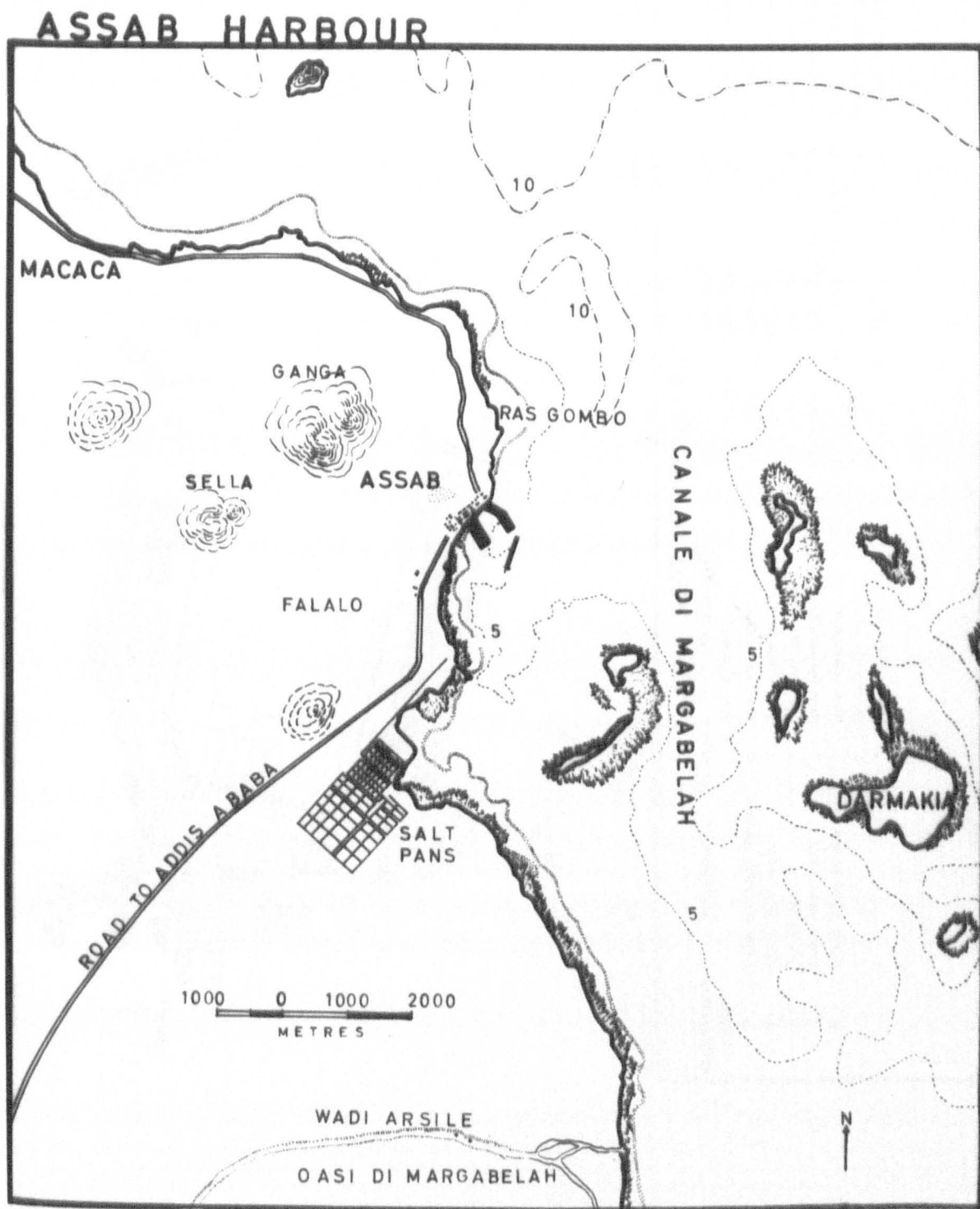
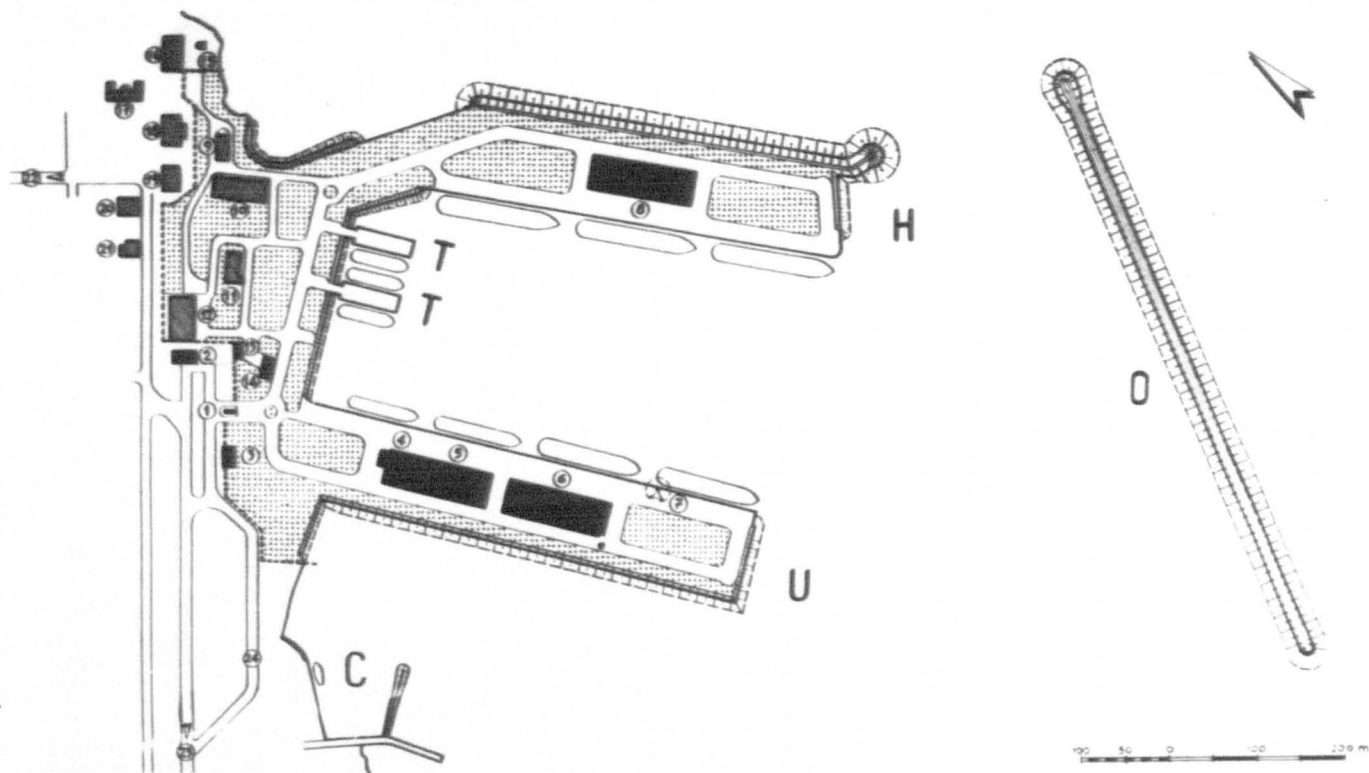


Fig. 71



PORT OF ASSAB, 1962

Identification Letter	Designation	No.	Description	No.	Description	No.	Description
T	Piers for Small Vessels	1	Port Entrance	9	Former Customs Office	17	Eritrean Government Office
H	North Half Jetty	2	New Port Office	10	Existing Warehouse	18	Port Administration
O	Breakwater	3	New Customs Office	11	Existing Warehouse	19	Former Port Office
U	South Half Jetty	4	Cold Storage Plant	12	Existing Warehouse	20	Telecommunications
C	Small Boat Harbour	5	New Warehouse	13	New Port Office Workshop	21	State Bank of Ethiopia
		6	New Warehouse	14	New Shower House and Clinic	22	Road to Airport
		7	Derrick Crane	15	Signal Tower	23	Road to Addis Ababa
		8	New Warehouse	16	Port Police Barracks	24	Access Road for Trucks

SOURCE: ETHIOPIAN MARINE DEPARTMENT, 1962

Fig. 72

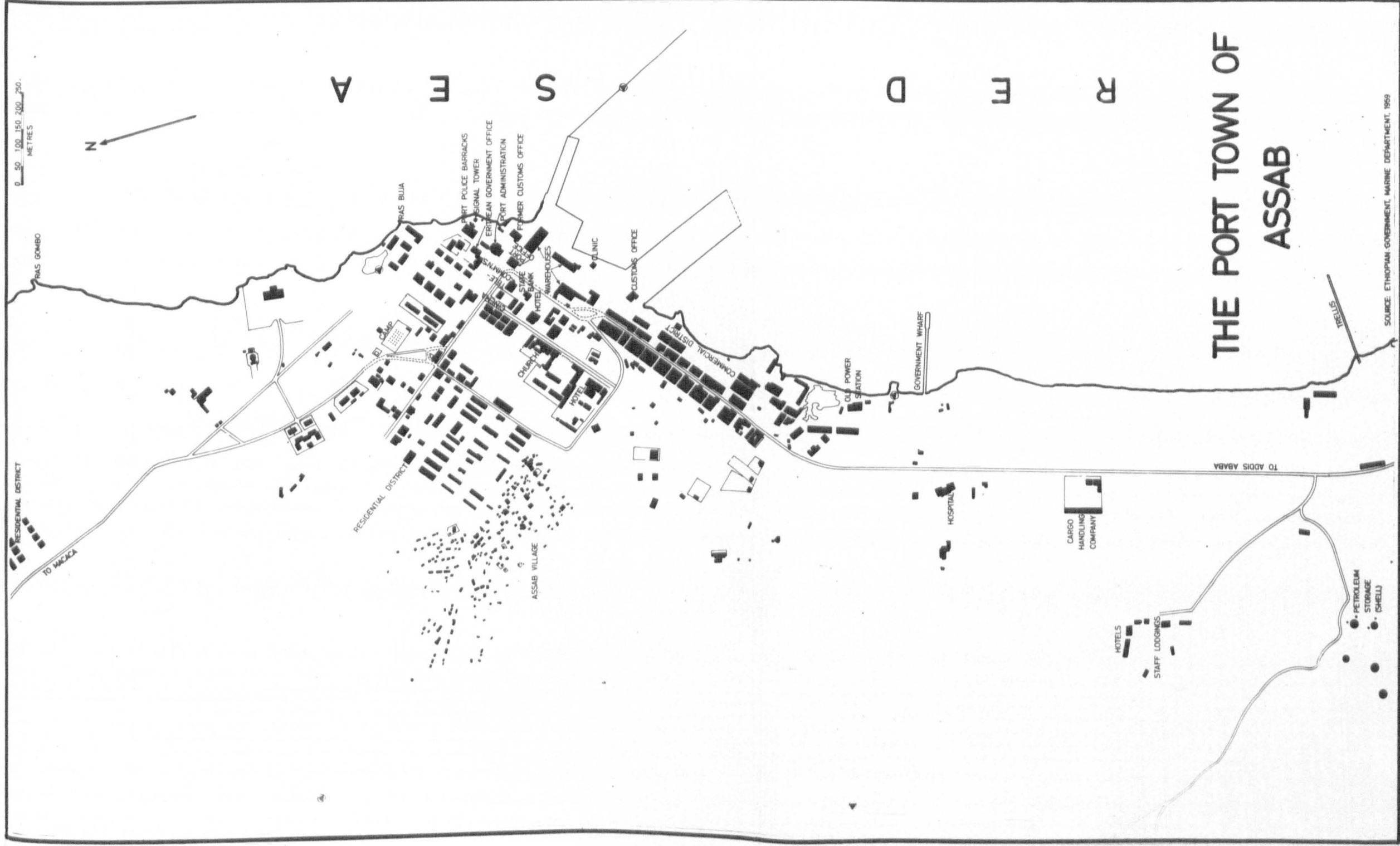


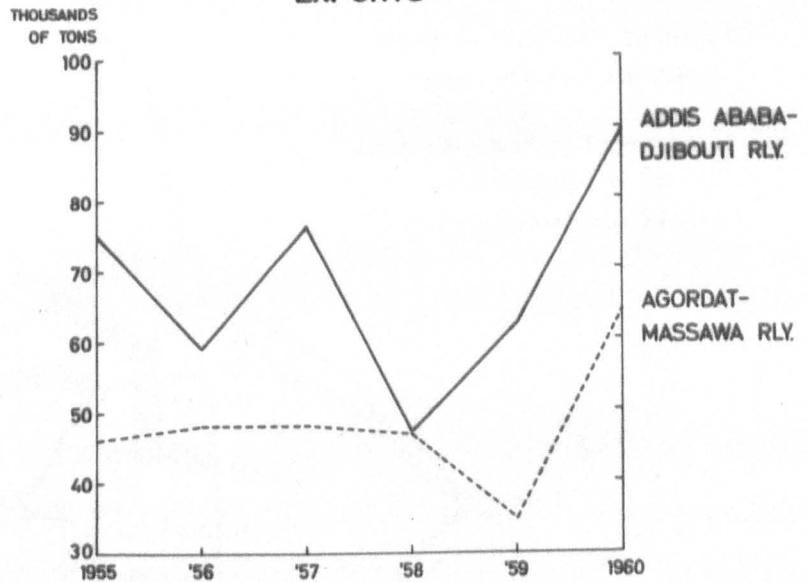
Fig. 73



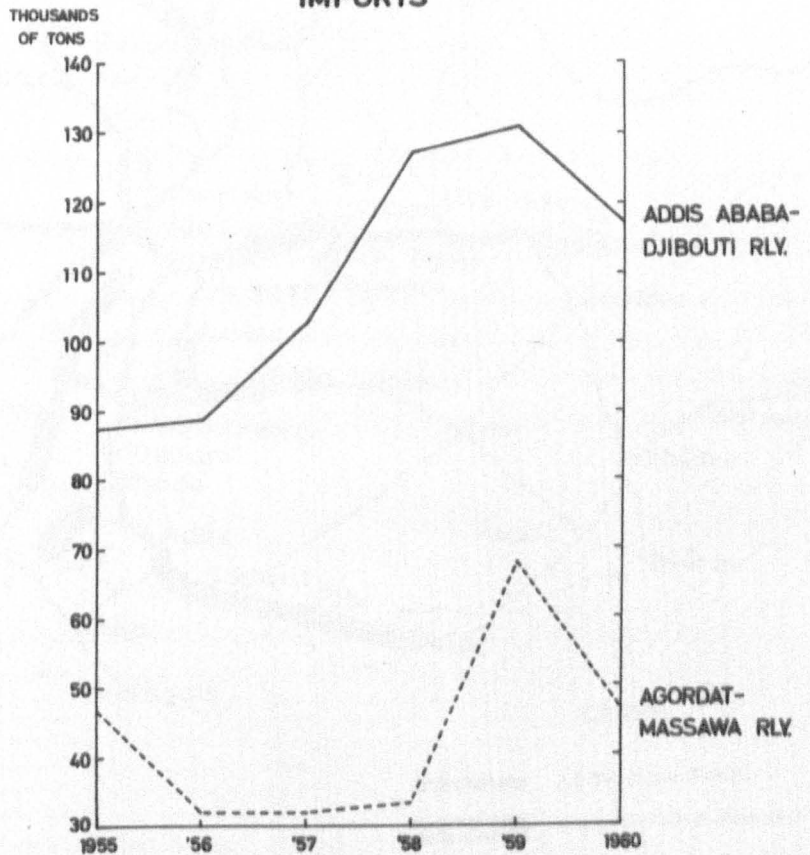
Fig. 74

TRAFFIC ON THE ADDIS ABABA AND MASSAWA RAILWAYS

EXPORTS



IMPORTS



SOURCE: ETHIOPIAN GOVERNMENT, MINISTRY OF COMMERCE AND INDUSTRY;
AUG., 1961

Fig. 75

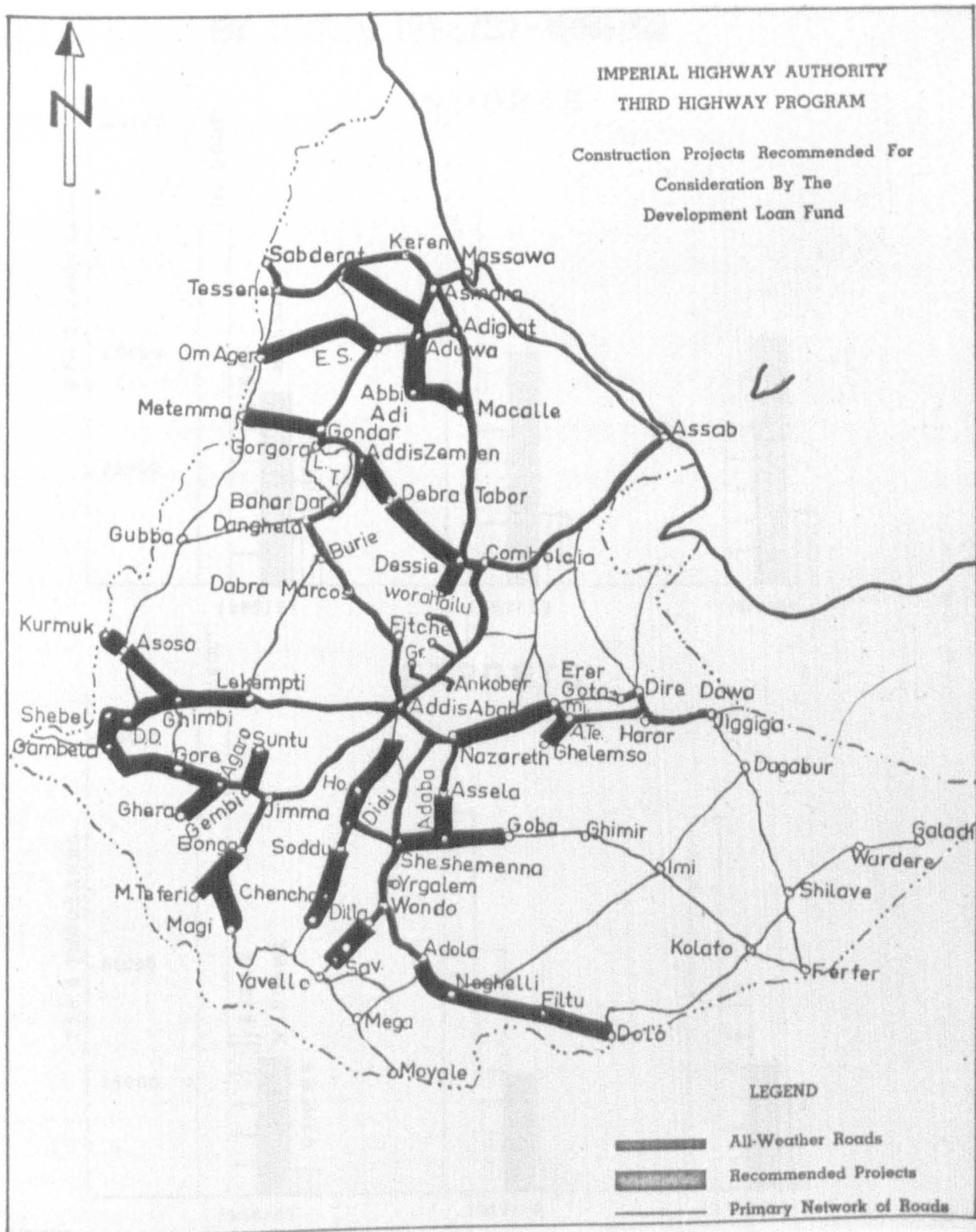


Fig. 76

DISTRIBUTION OF EXTERNAL TRADE IN VALUE BY PORTS 1956/57-1958/59

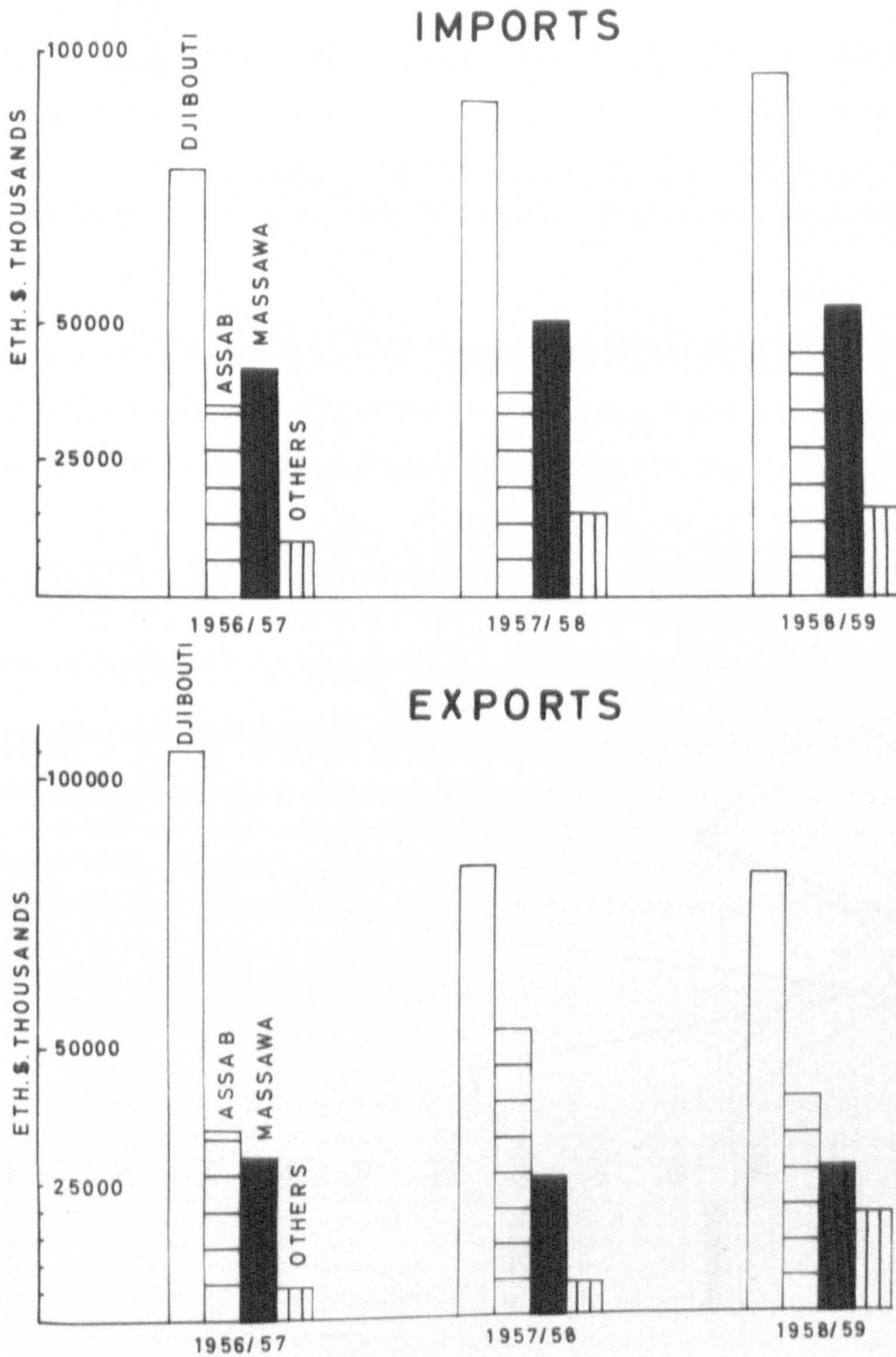
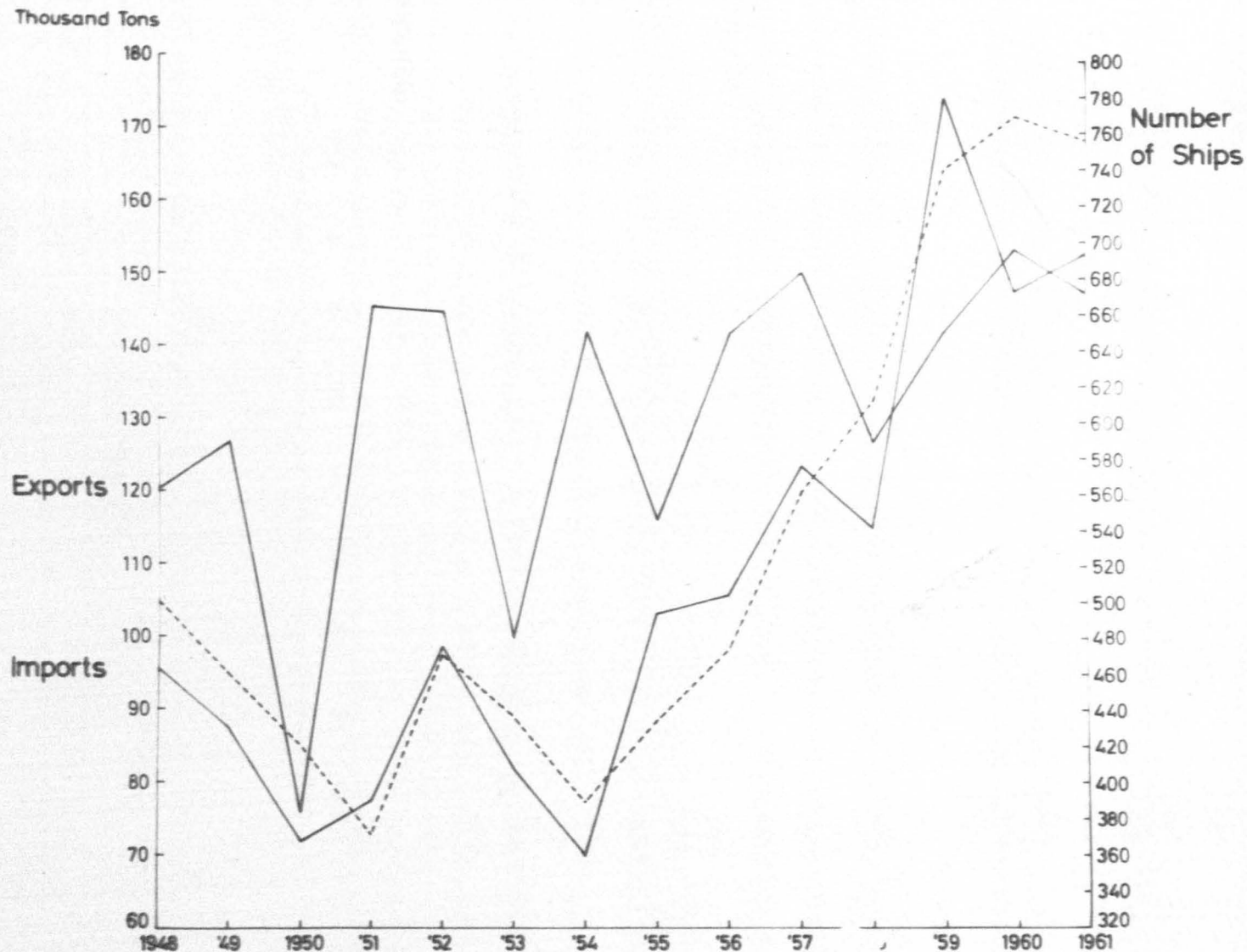


Fig. 77

TRADE MOVEMENTS OF PORT MASSAWA



Source: Ministry of Commerce and Industry (Ethiopian Government), 1961

Fig. 78

TRADE MOVEMENTS OF PORT ASSAB

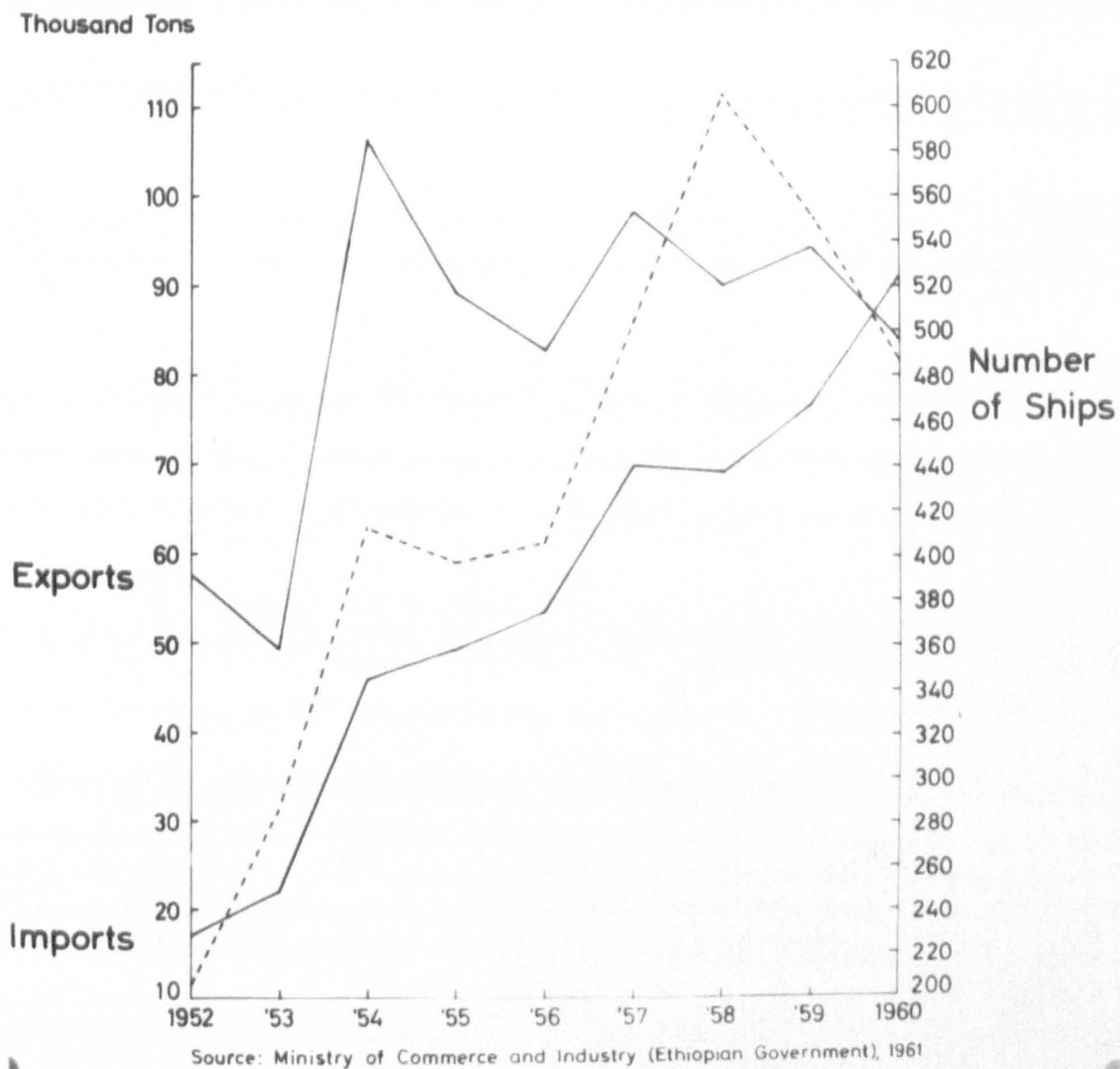


Fig. 79

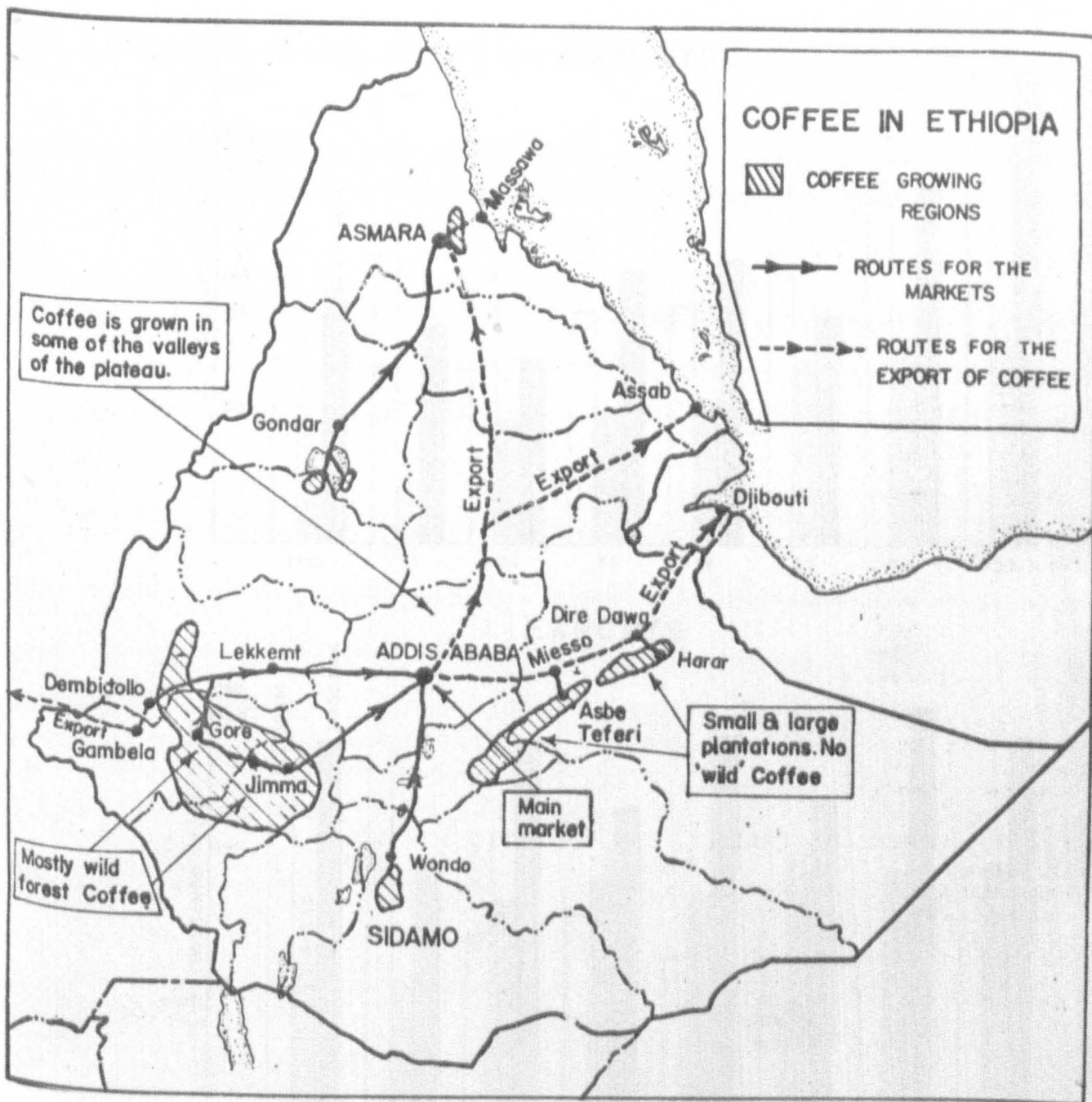
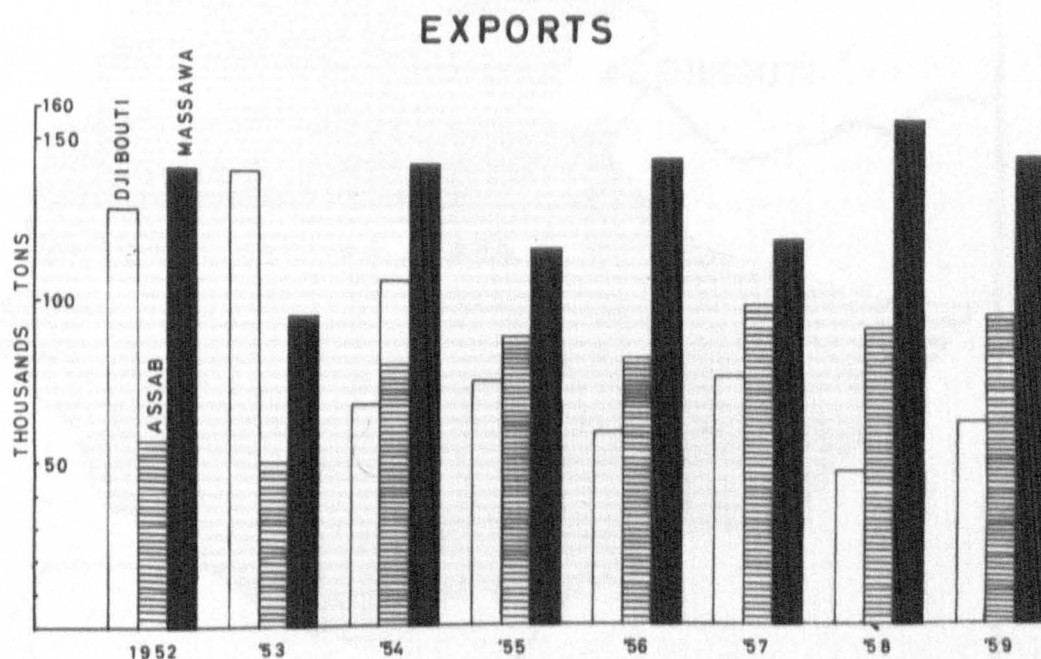
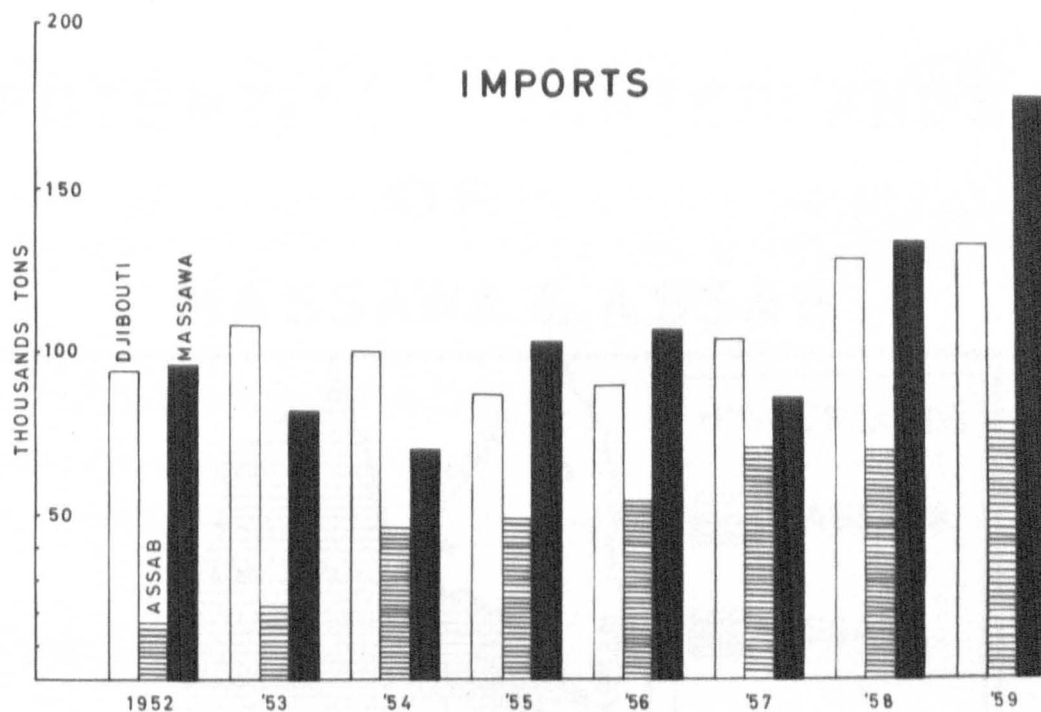


Fig. 80

DISTRIBUTION OF IMPORT AND EXPORT TONNAGE

BY PORTS 1952/59



SOURCE: ETHIOPIAN GOVERNMENT

MINISTRY OF COMMERCE & PLANNING 1960

Fig. 81

POTENTIAL HINTERLANDS OF MASSAWA & ASSAB

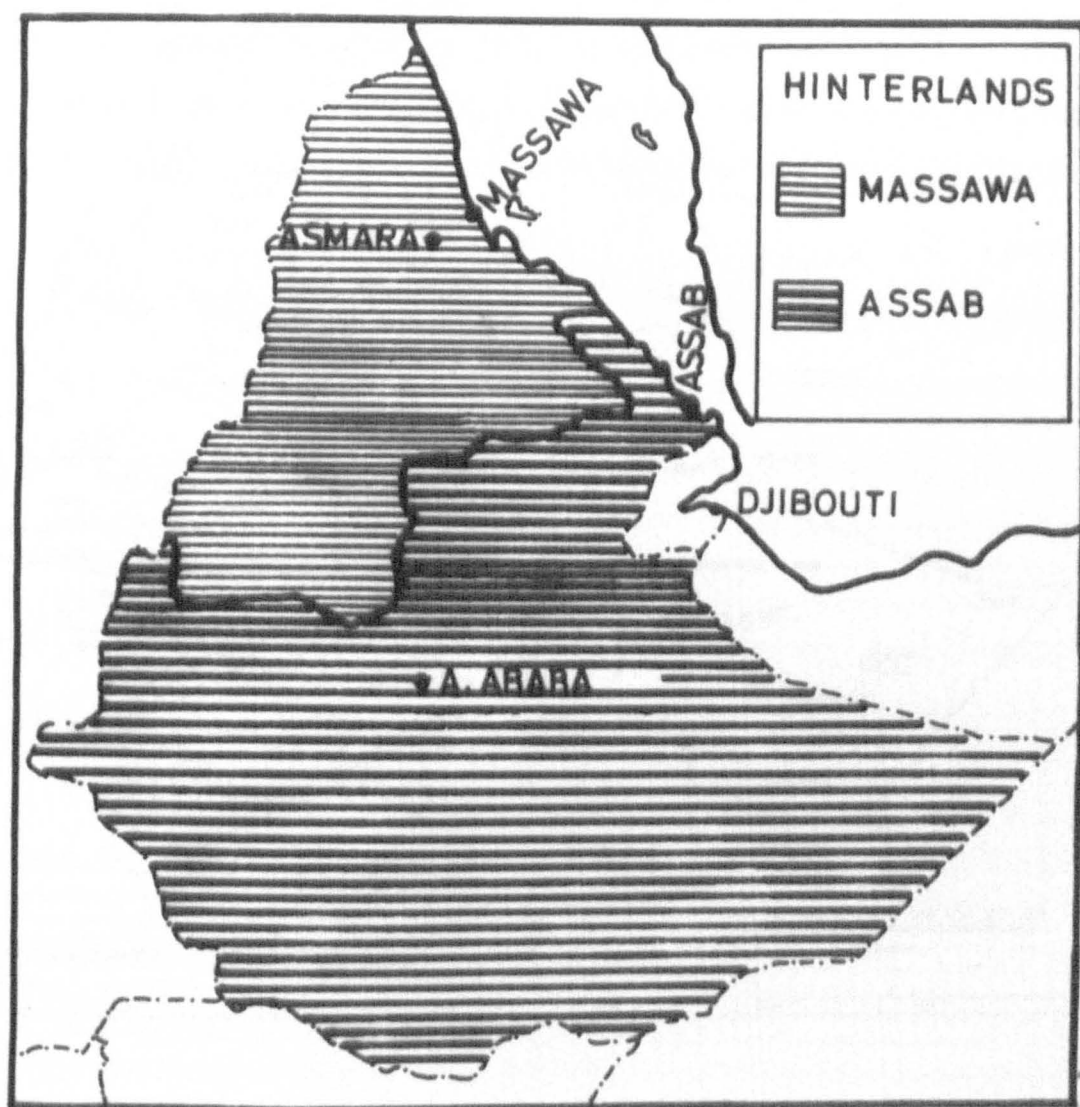


Fig. 82

THE FORELANDS OF ETHIOPIA 1957&1960

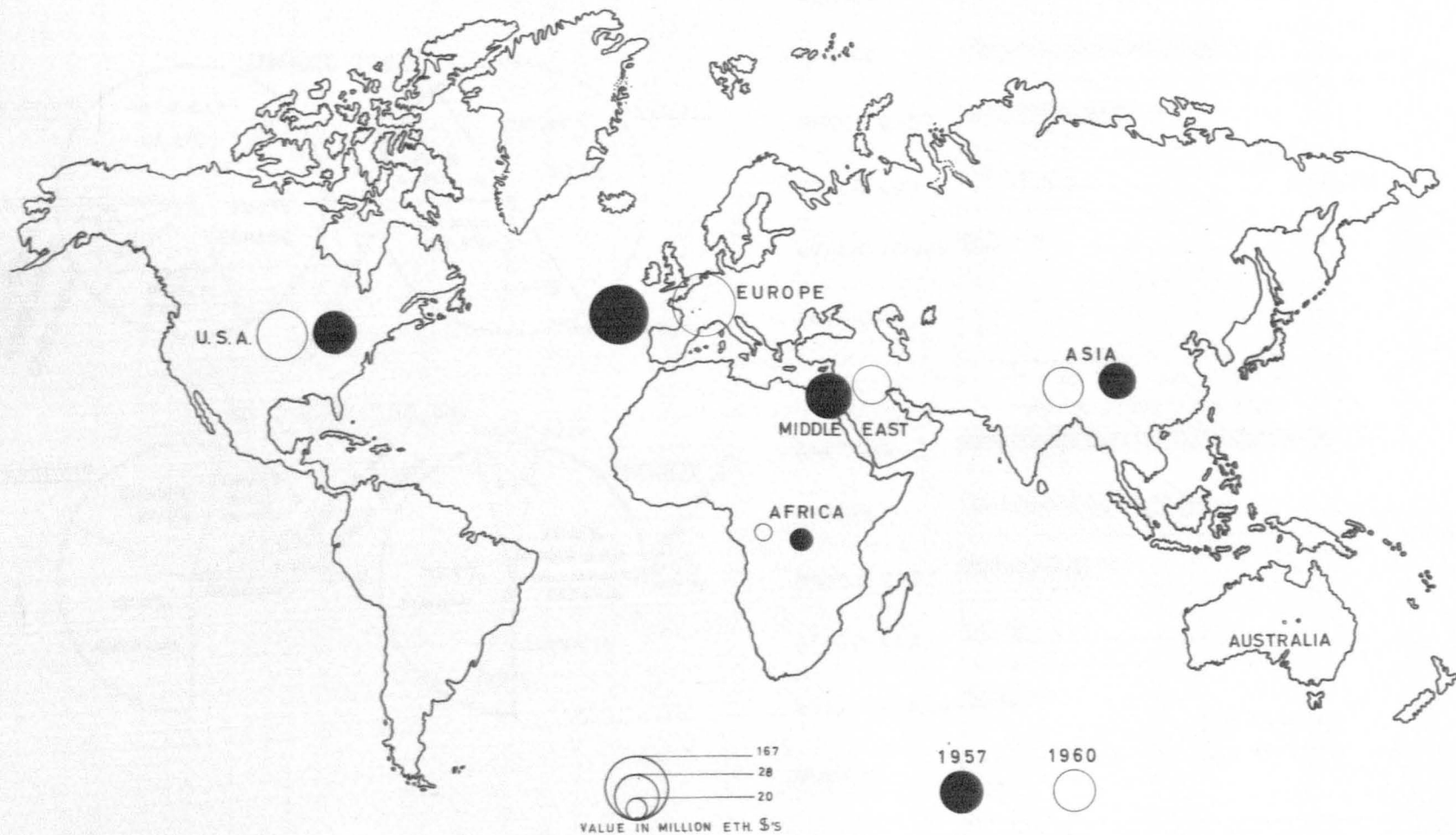
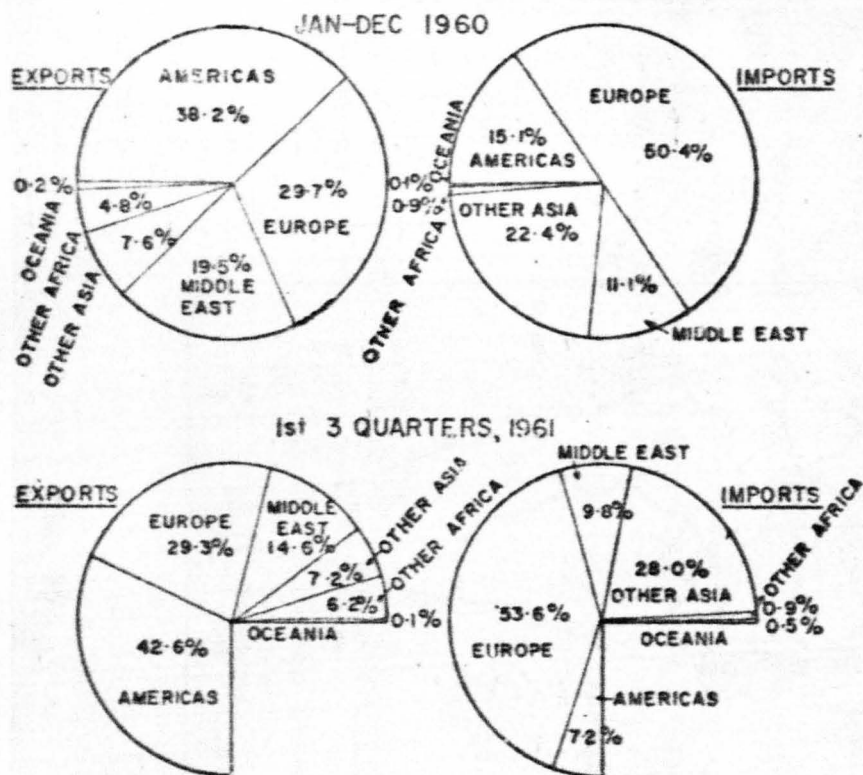


Fig. 84

ETHIOPIA'S EXTERNAL TRADE

PERCENTAGE DISTRIBUTION BY GEOGRAPHICAL AREAS



DISTRIBUTION BY GEOGRAPHICAL AREAS (IN ETH. \$ MILLIONS)

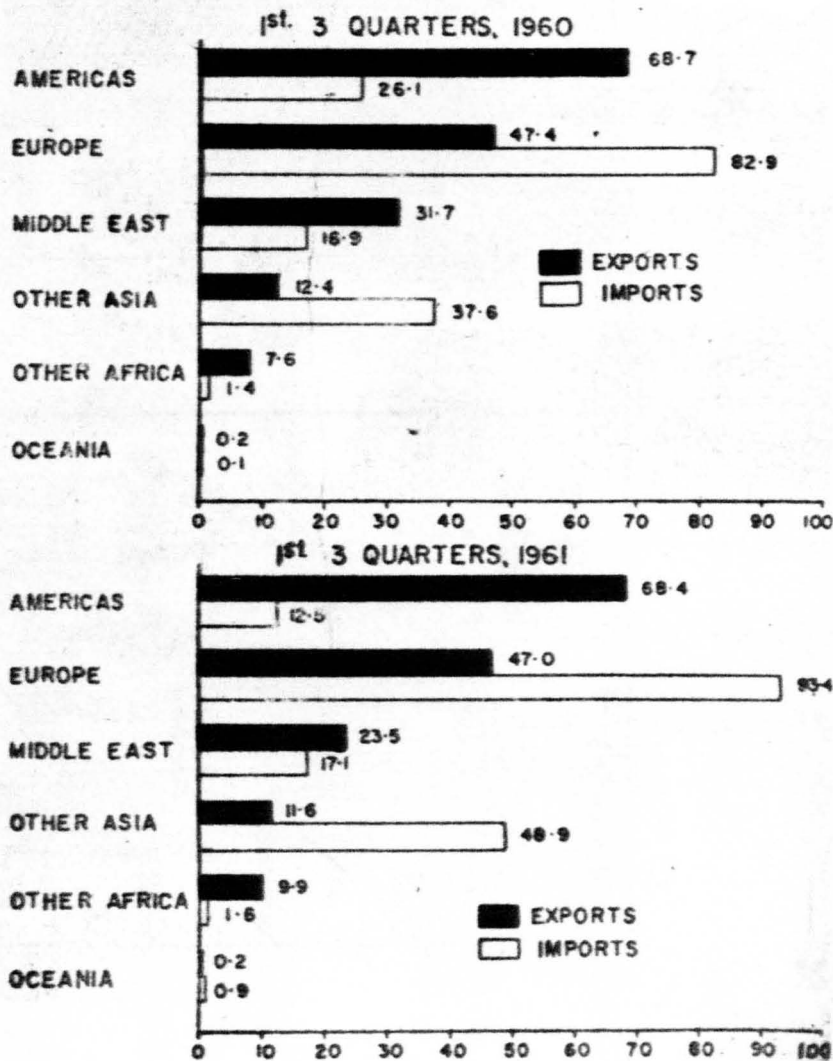


Fig. 85

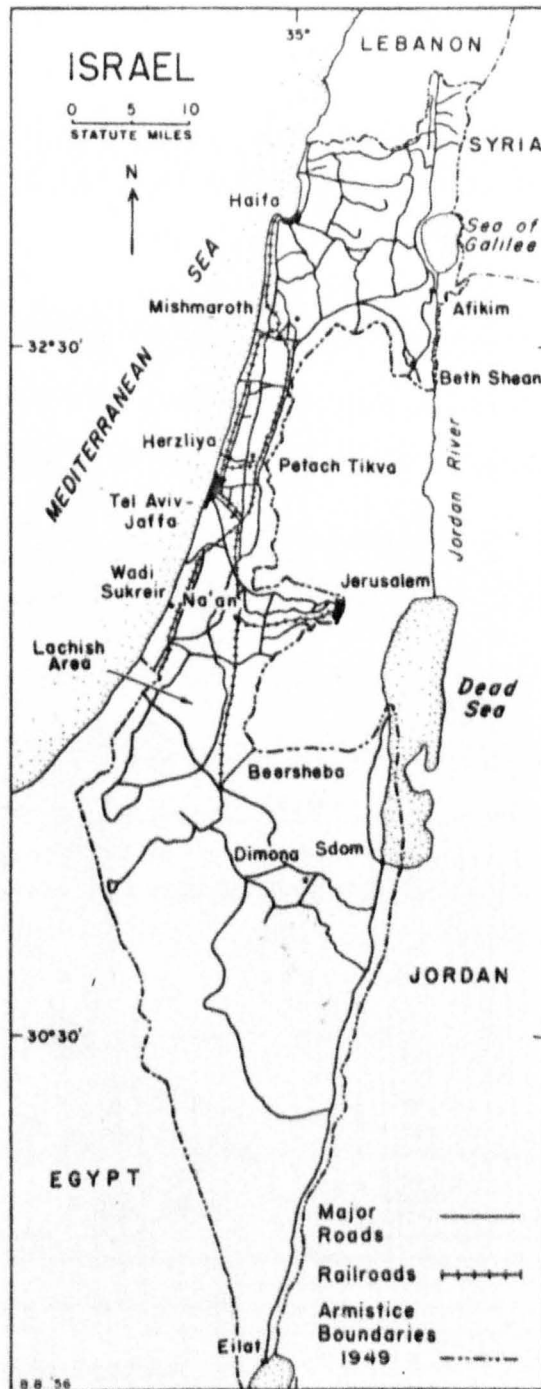


Fig. 86

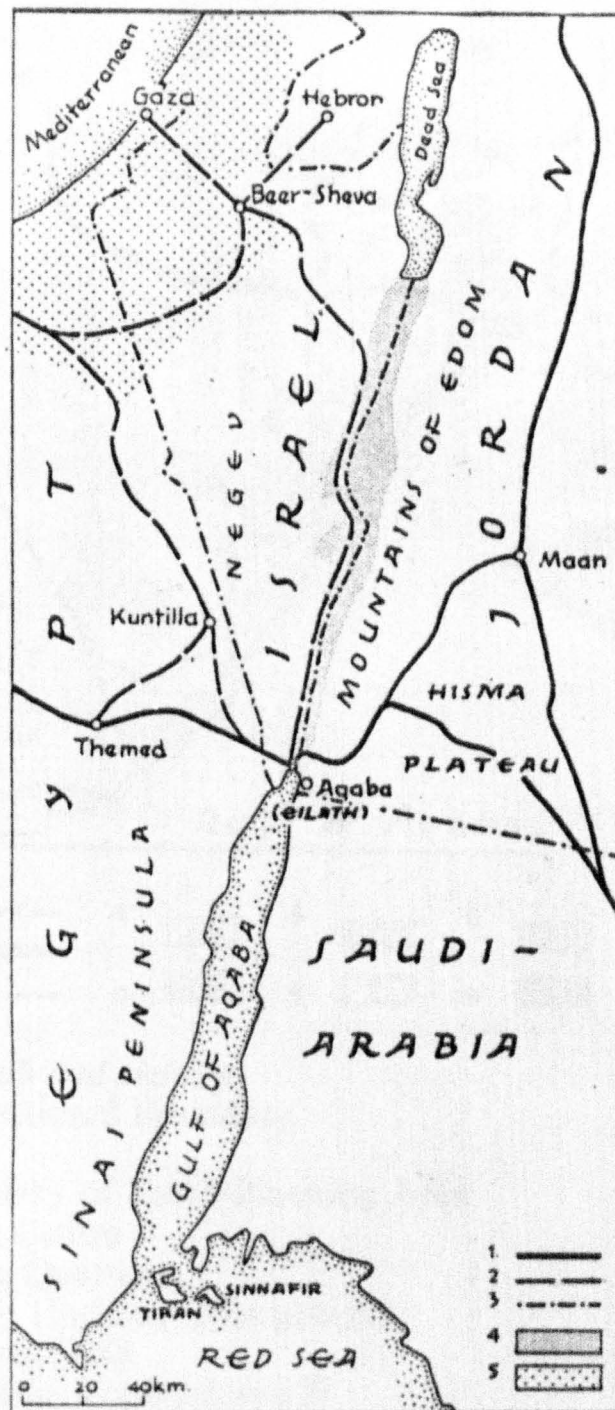


Fig. 37: Historical approaches to Eilat

1. Pilgrim Route
2. Other Routes
3. Modern Political Boundary
4. Rift Valley (Aravah)
5. Coastal Plain

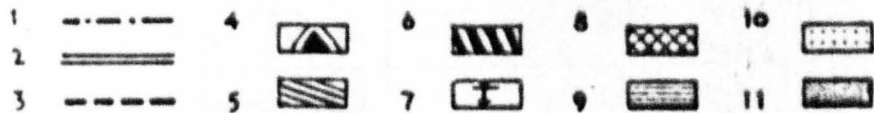
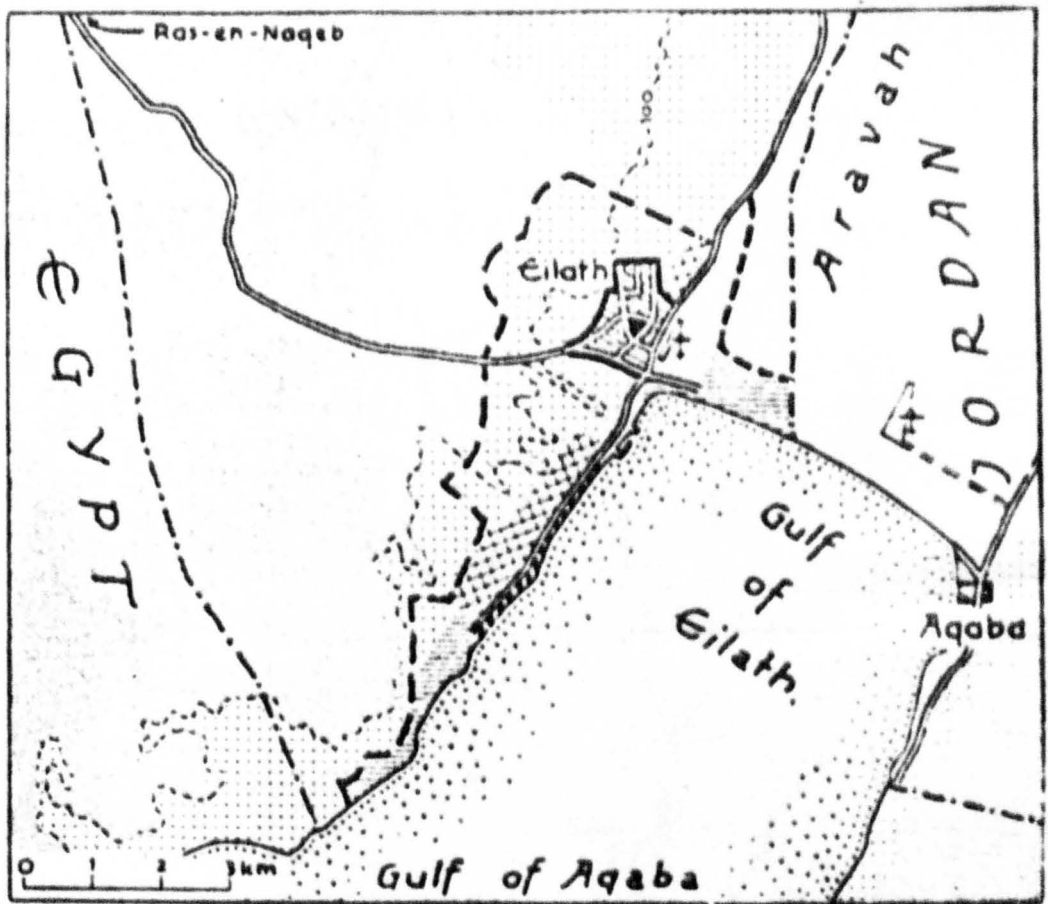


Fig.88: Eilat and vicinity

1. International Boundary
2. Road
3. Boundary of Town-Planning Area
4. Town Centre
5. Living Quarters
6. Future Harbour Enlargement
7. Landing Strip
8. Industrial Zone (planned)
9. Recreation and Tourism
10. Slightly Sloping Ground
11. Granite Mountains

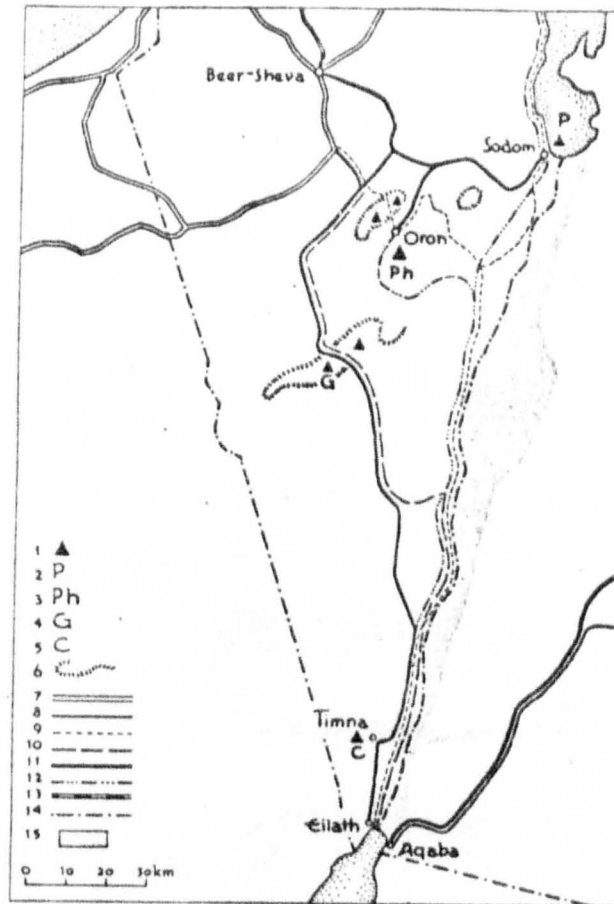
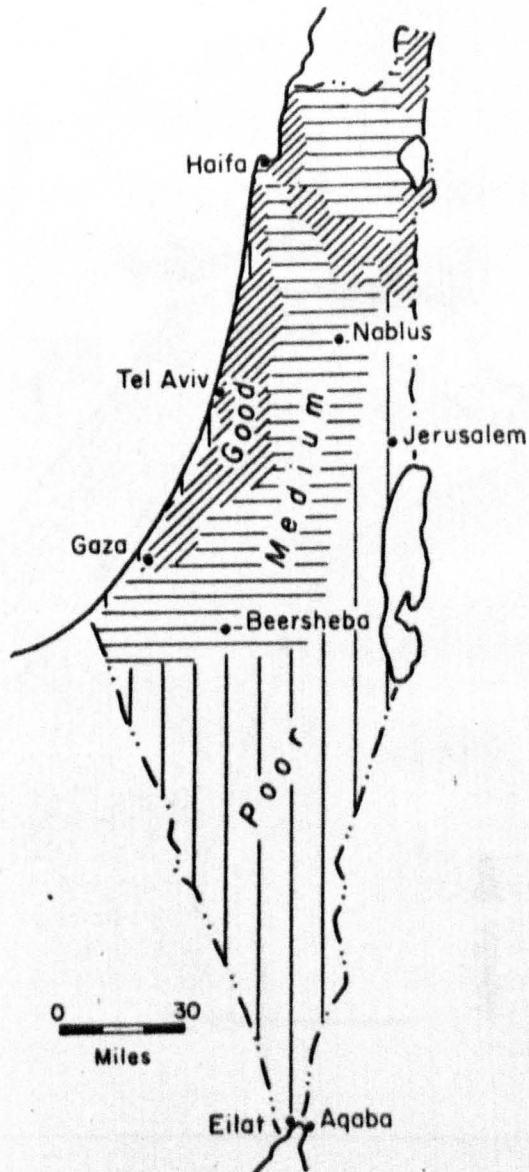


Fig. 89 The Negev
development of minerals and roads since 1948

1. Major mining area
2. P = potash
3. Ph = phosphates
4. G = gypsum
5. C = copper
6. Machtesh (Erosion Crater)
7. Main road 1948
8. Secondary road 1948
9. Dust road 1949
10. Improved road 1955
11. Metalled road by 1958
12. Planned road
13. Railway
14. International Boundary
15. Rift Valley (Aravah)

Israel

LAND CLASSIFICATION



The best land in Palestine lies near the coast and in the Esdraelon valley. (Based on S. Hadawi, "Land Ownership in Palestine.")

Fig. 90

THE PORT OF AQABA

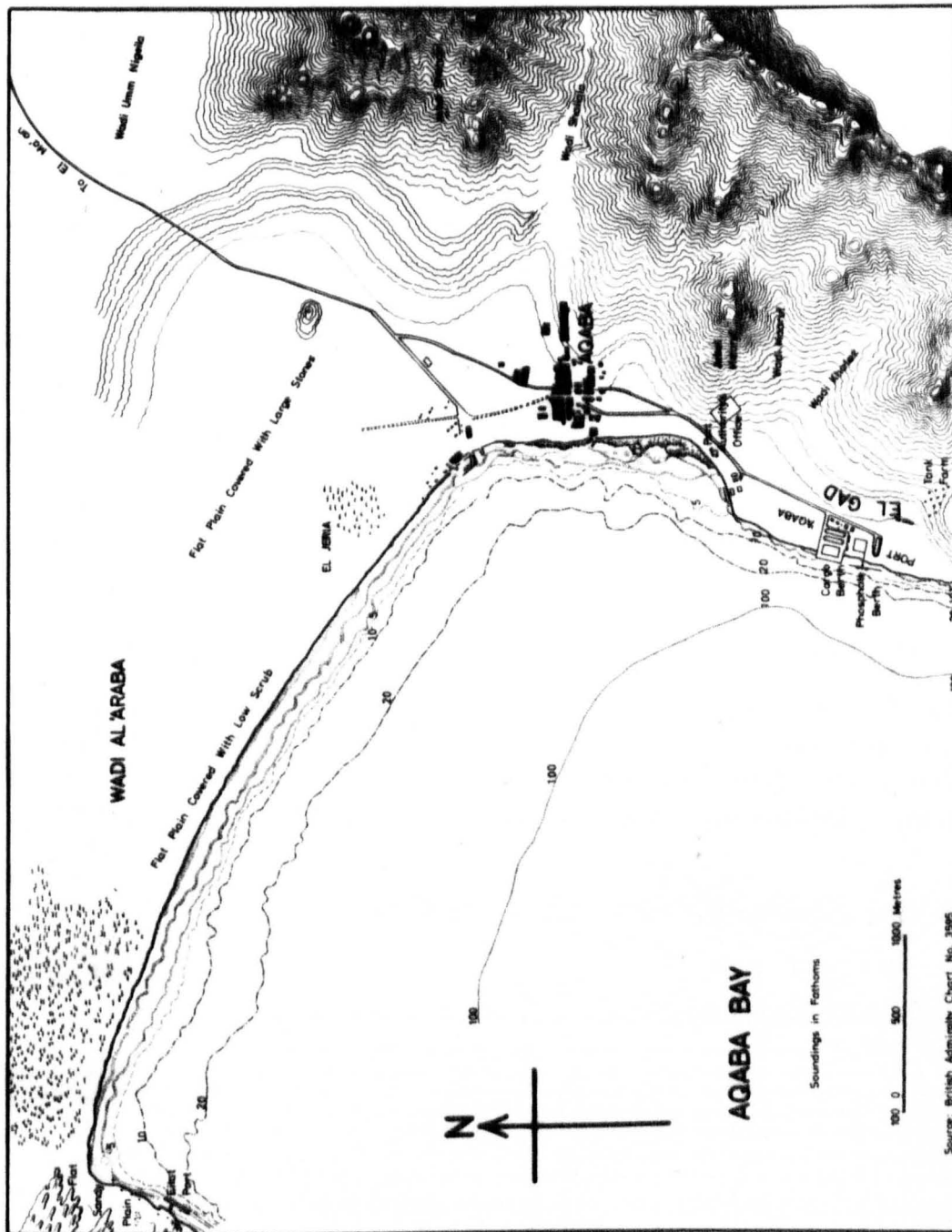


Fig. 91

JORDAN-Transportation

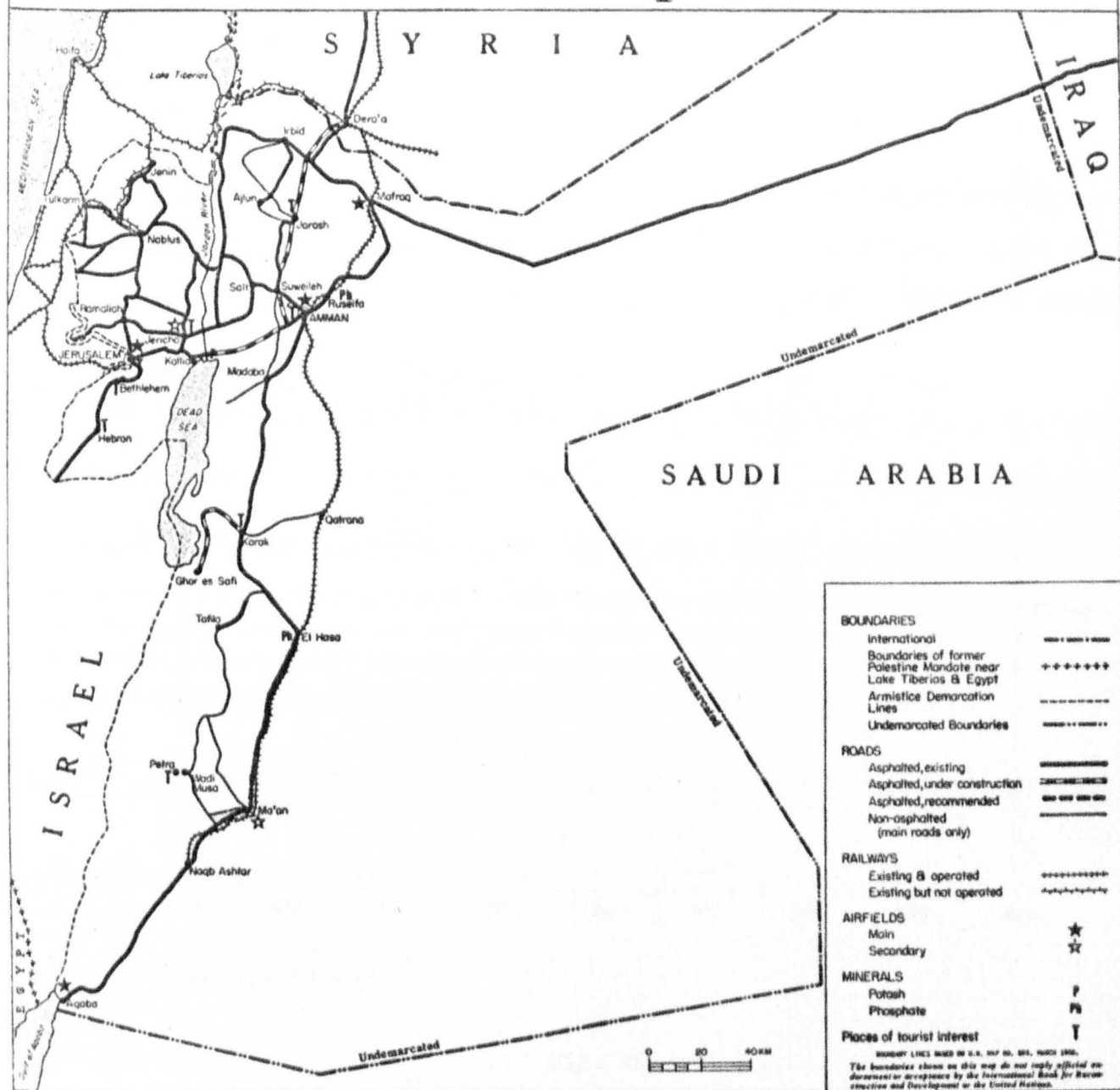
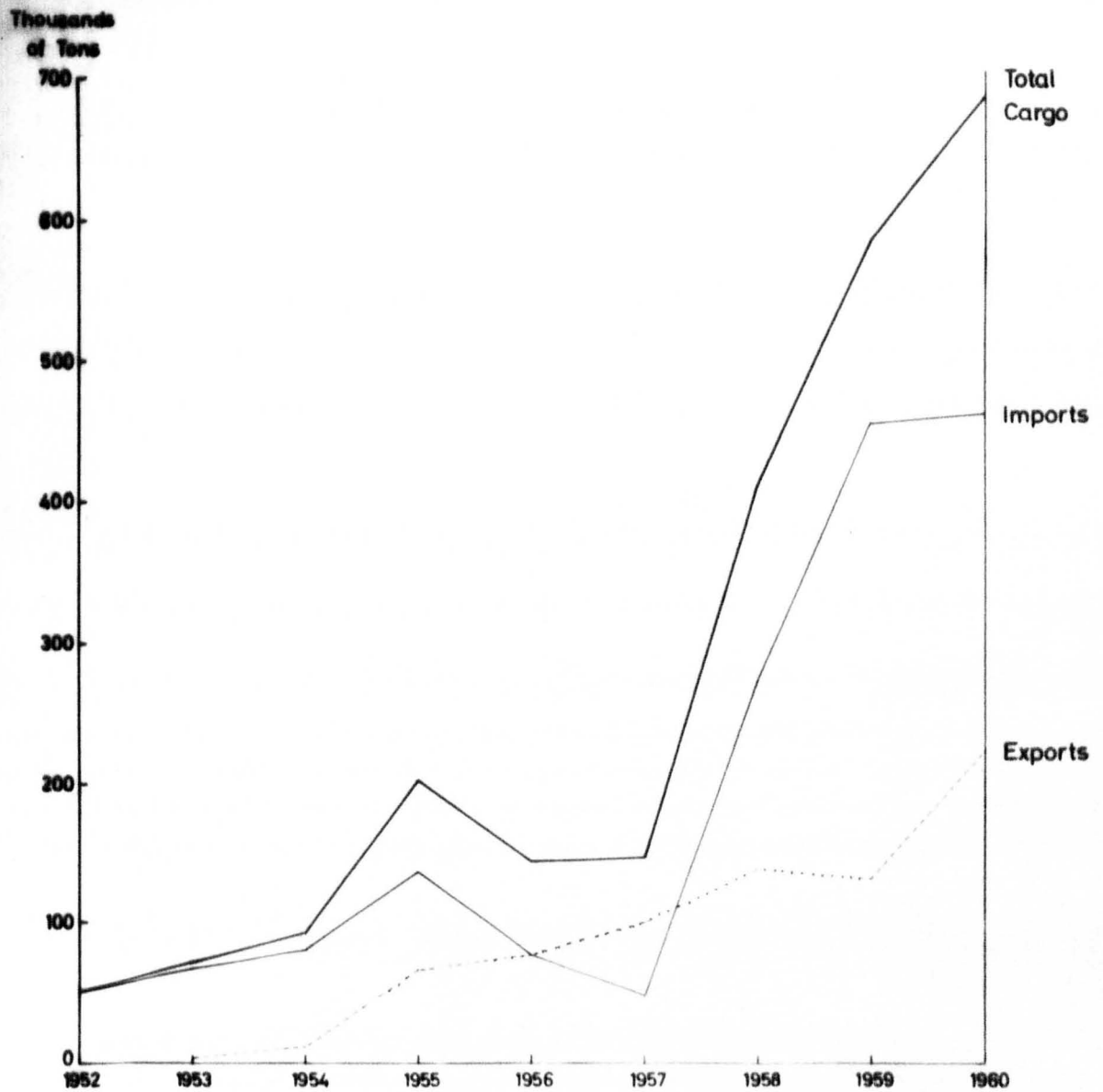


Fig. 93

AQABA PORT

ANNUAL GROWTH OF PORT TRAFFIC



Source: Aqaba Port Authority

Fig. 94

JORDAN-Mineral Locations

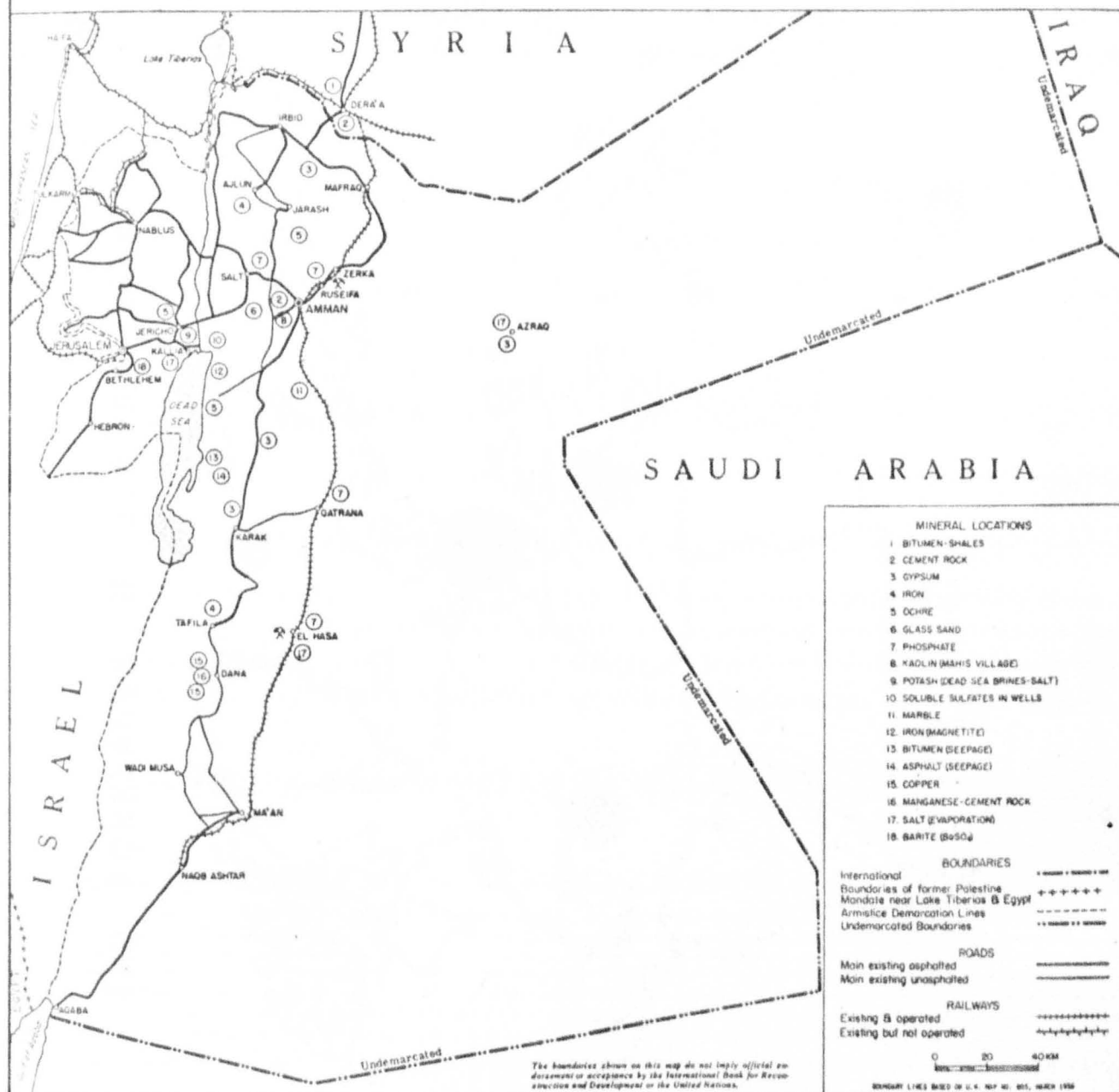


Fig. 95

THE FORELANDS OF JORDAN 1959&1961

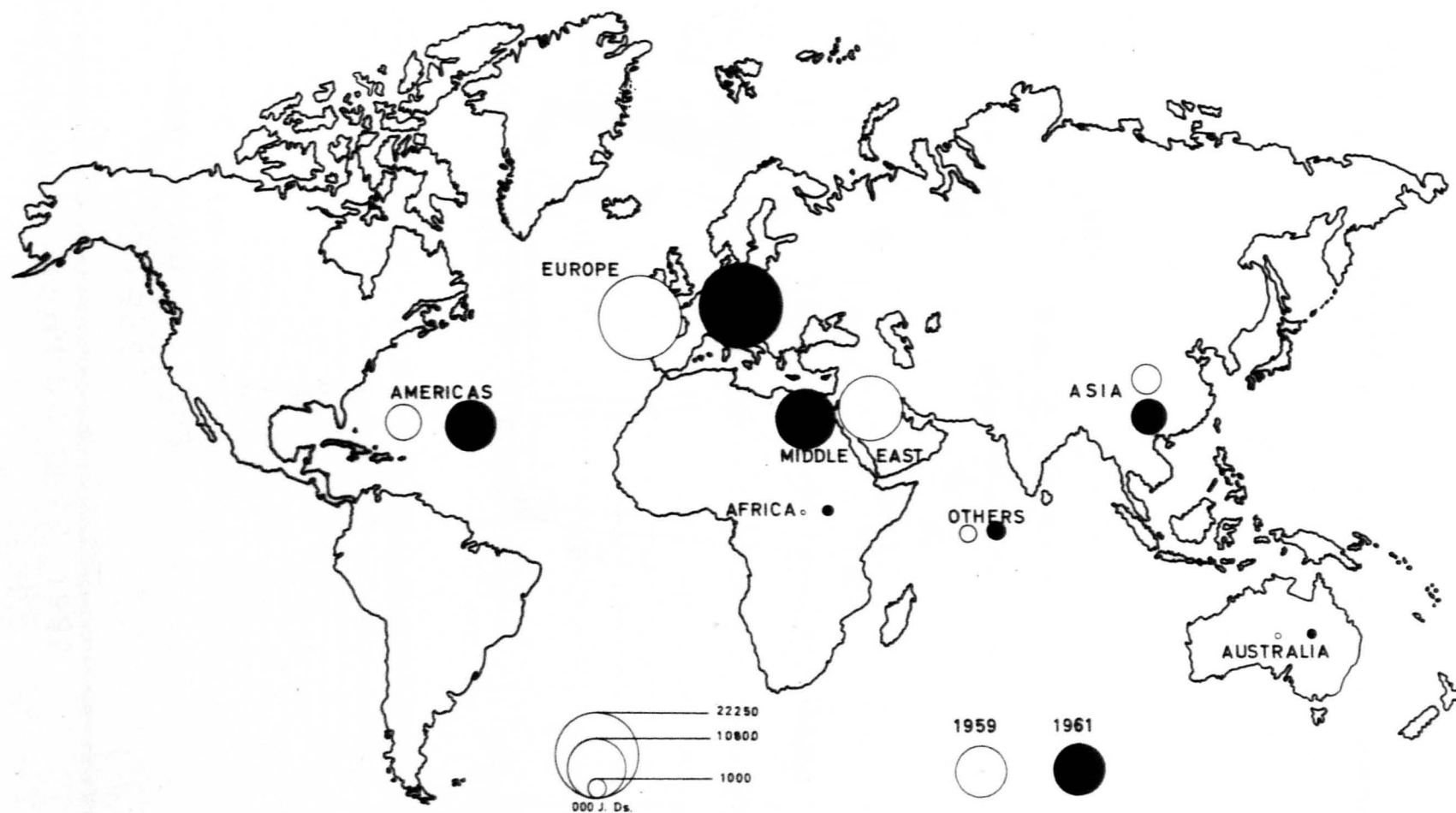
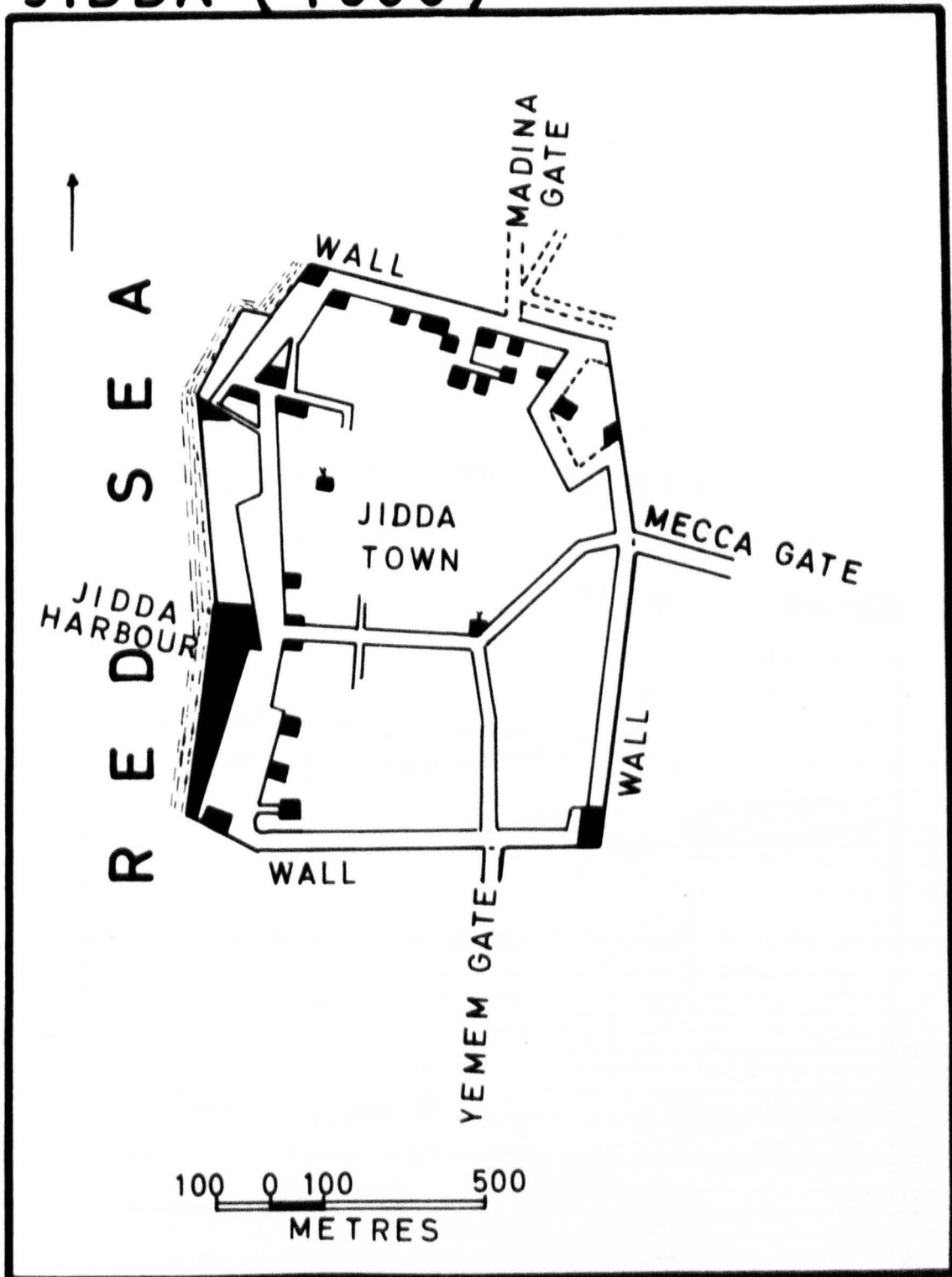


Fig. 96

JIDDA (1900)



SOURCE: TOWN PLANNING DEPT. 1962

Fig. 97

JIDDA HARBOUR

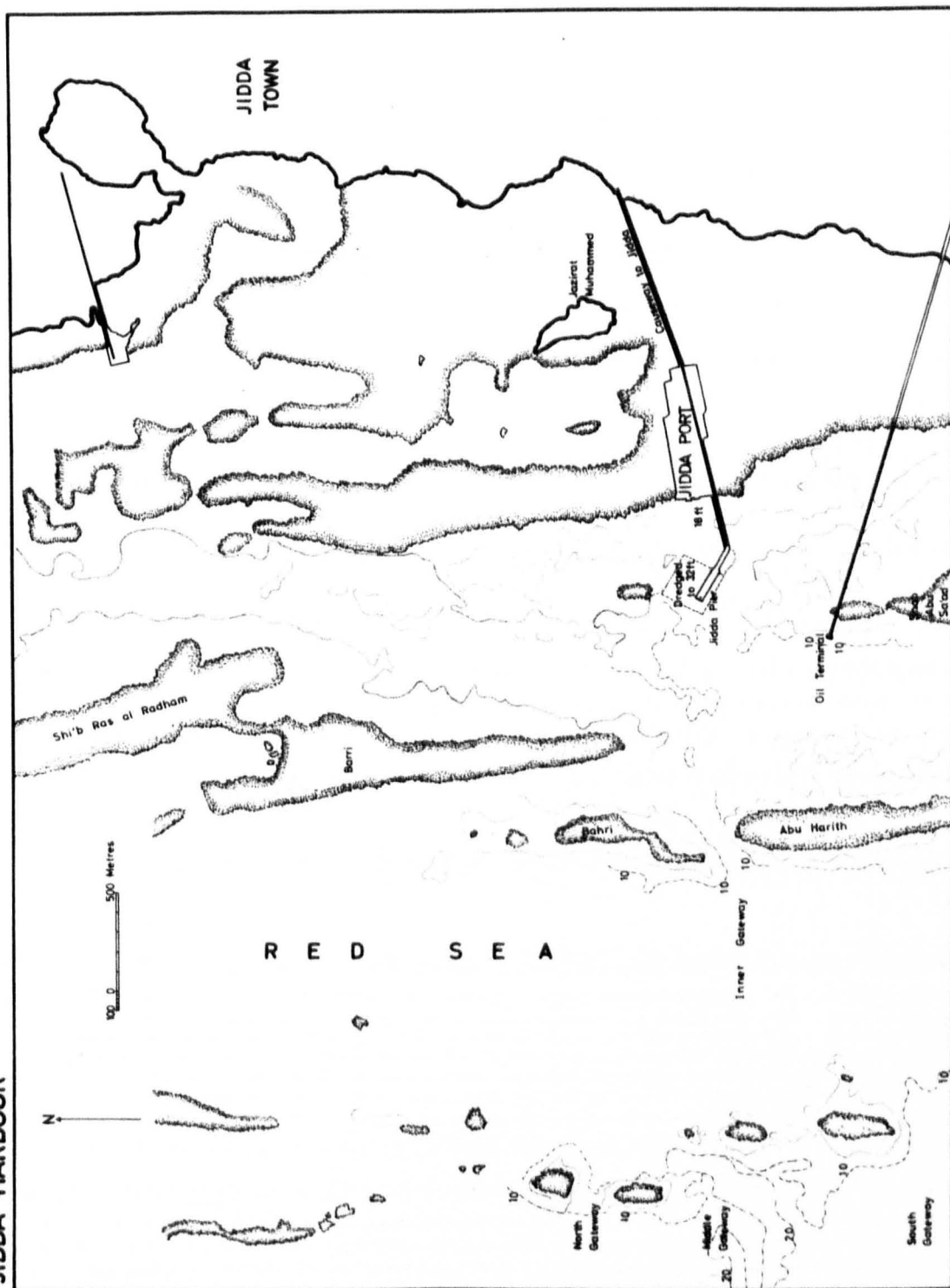
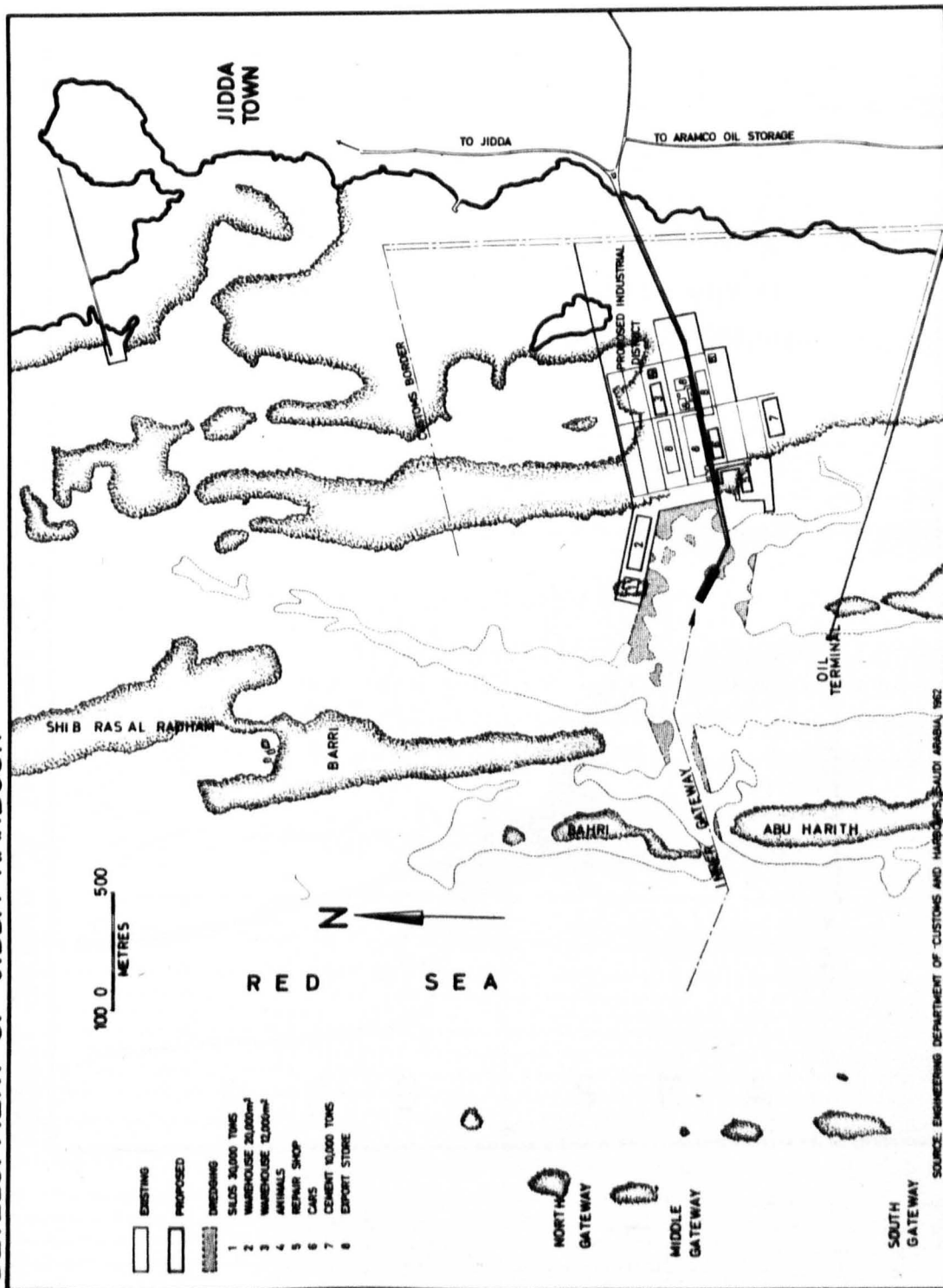


Fig. 98

Source: 1. Engineering Department of Jidda Port
2. British Admiralty Chart No. 2577

DEVELOPMENT OF JIDDA HARBOUR



SOURCE: ENGINEERING DEPARTMENT OF CUSTOMS AND MARSHES, SAUDI ARABIA, 1962

Fig. 99

[illegible]

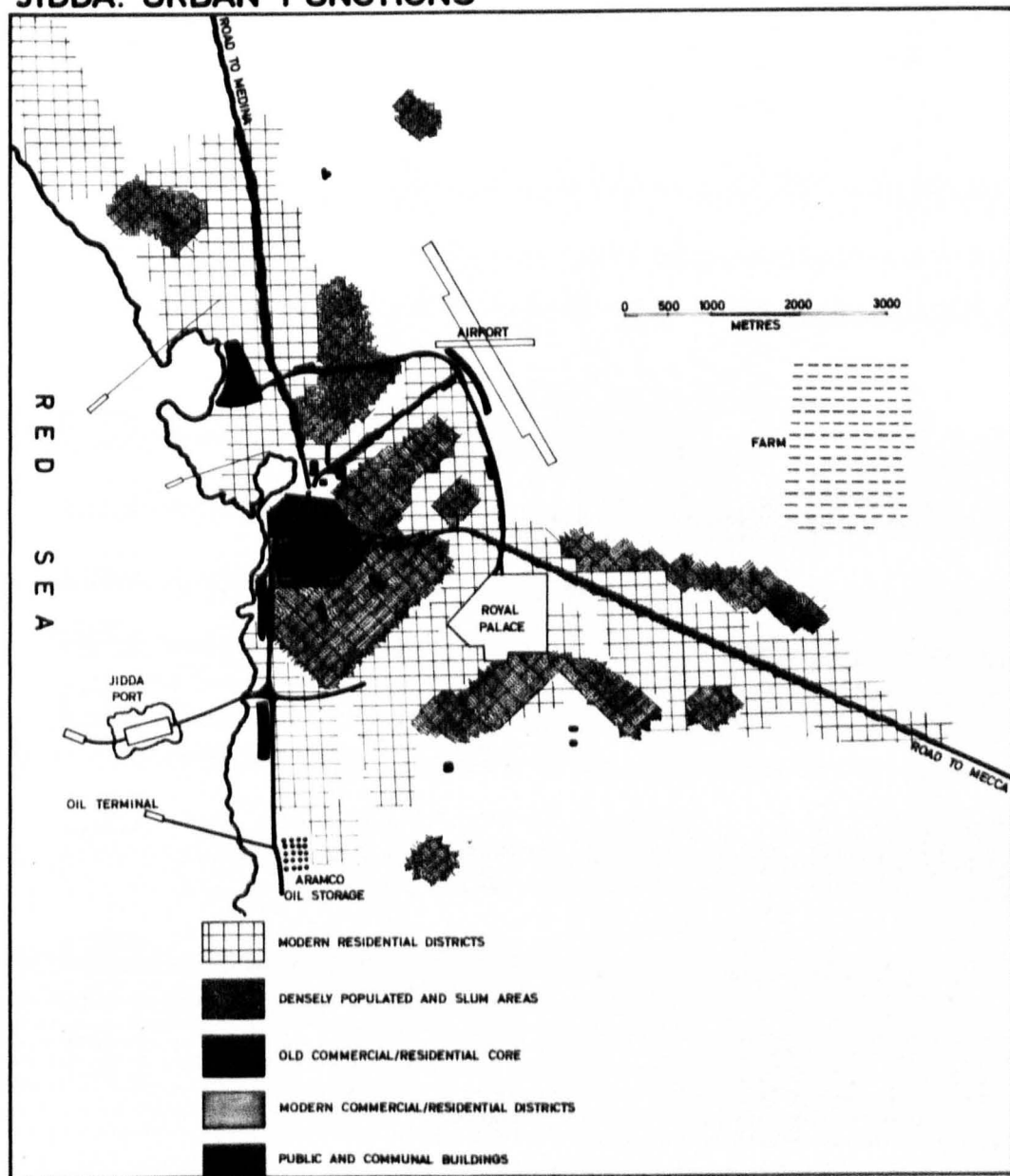
Fig. 100

THE PORT TOWN OF JIDDA



Fig. 101

JIDDA: URBAN FUNCTIONS

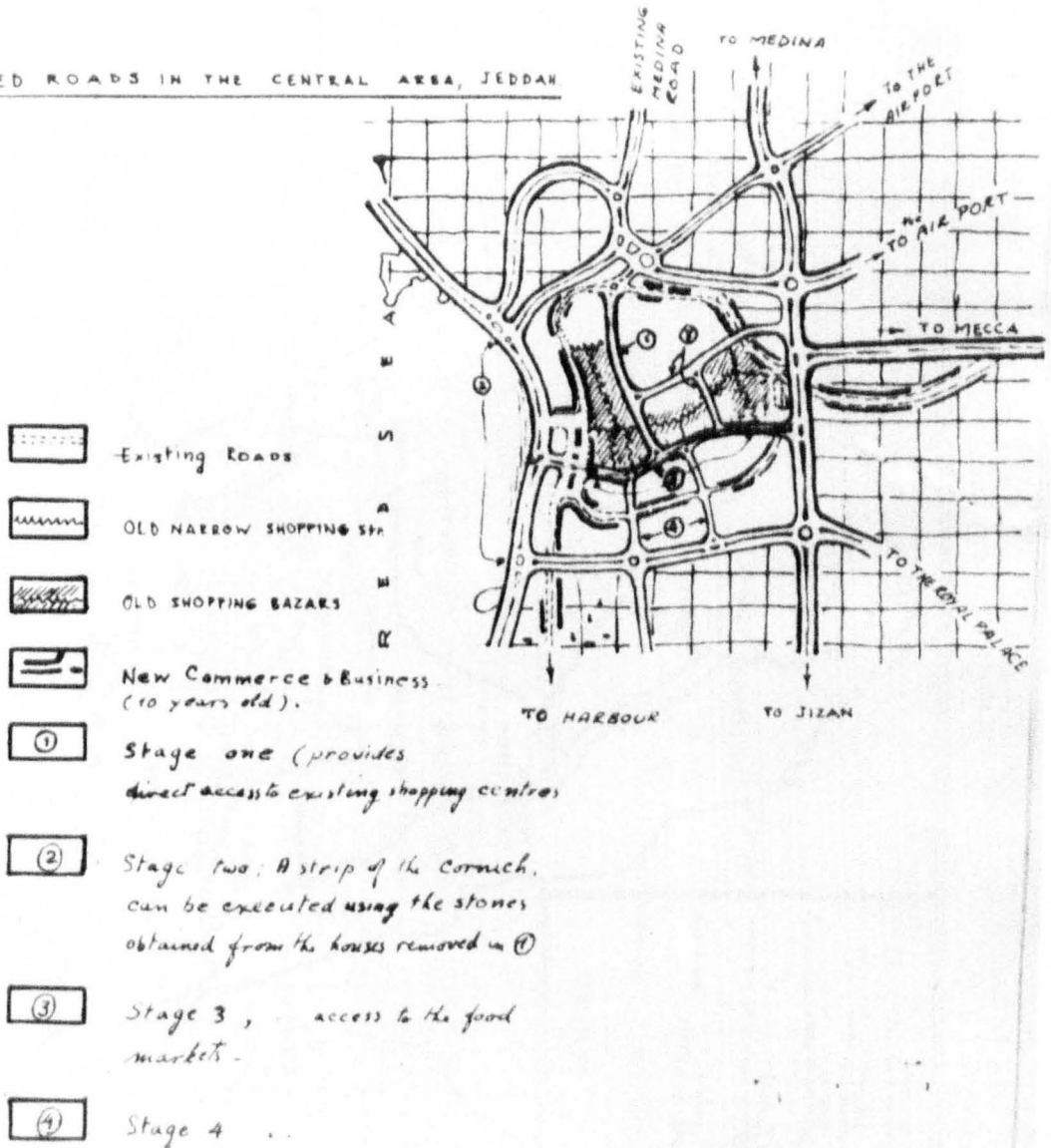


SOURCE: UNITED NATIONS TOWN PLANNING DEPARTMENT, JIDDA, SAUDI ARABIA

Fig. 102

JIDDA TOWN

PROPOSED ROADS IN THE CENTRAL AREA, JEDDAH



A. G. Alkhalaf
JULY 1960

Fig. 103

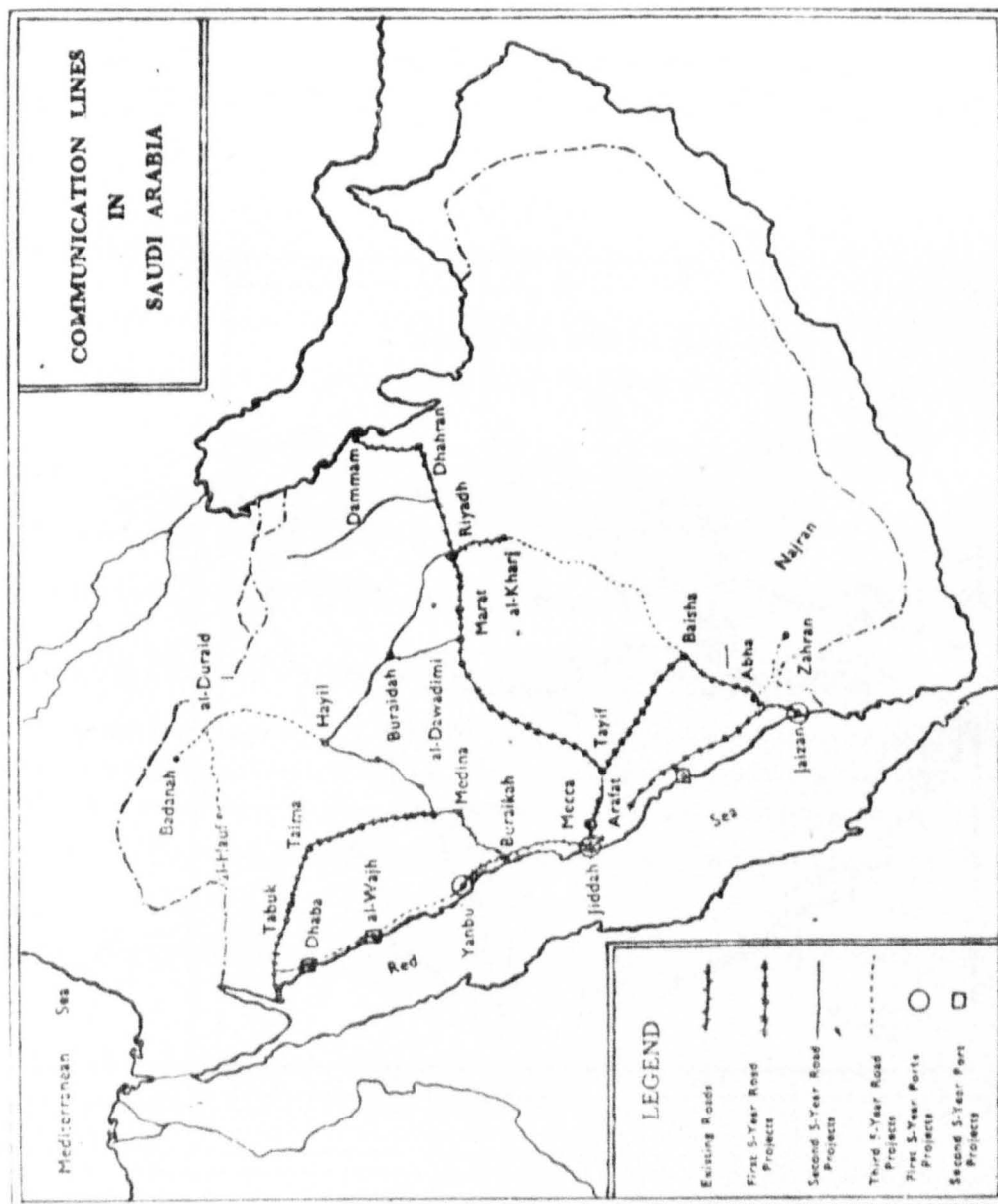


Fig. 104

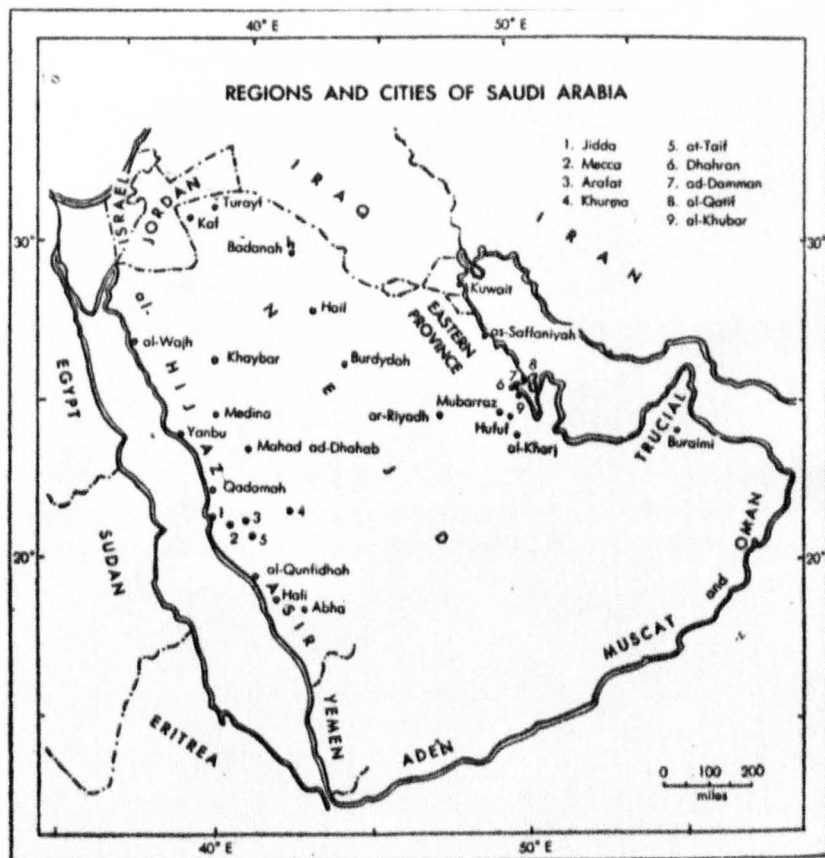


Fig. 105

JIDDA PORT

ANNUAL GROWTH OF PORT TRAFFIC

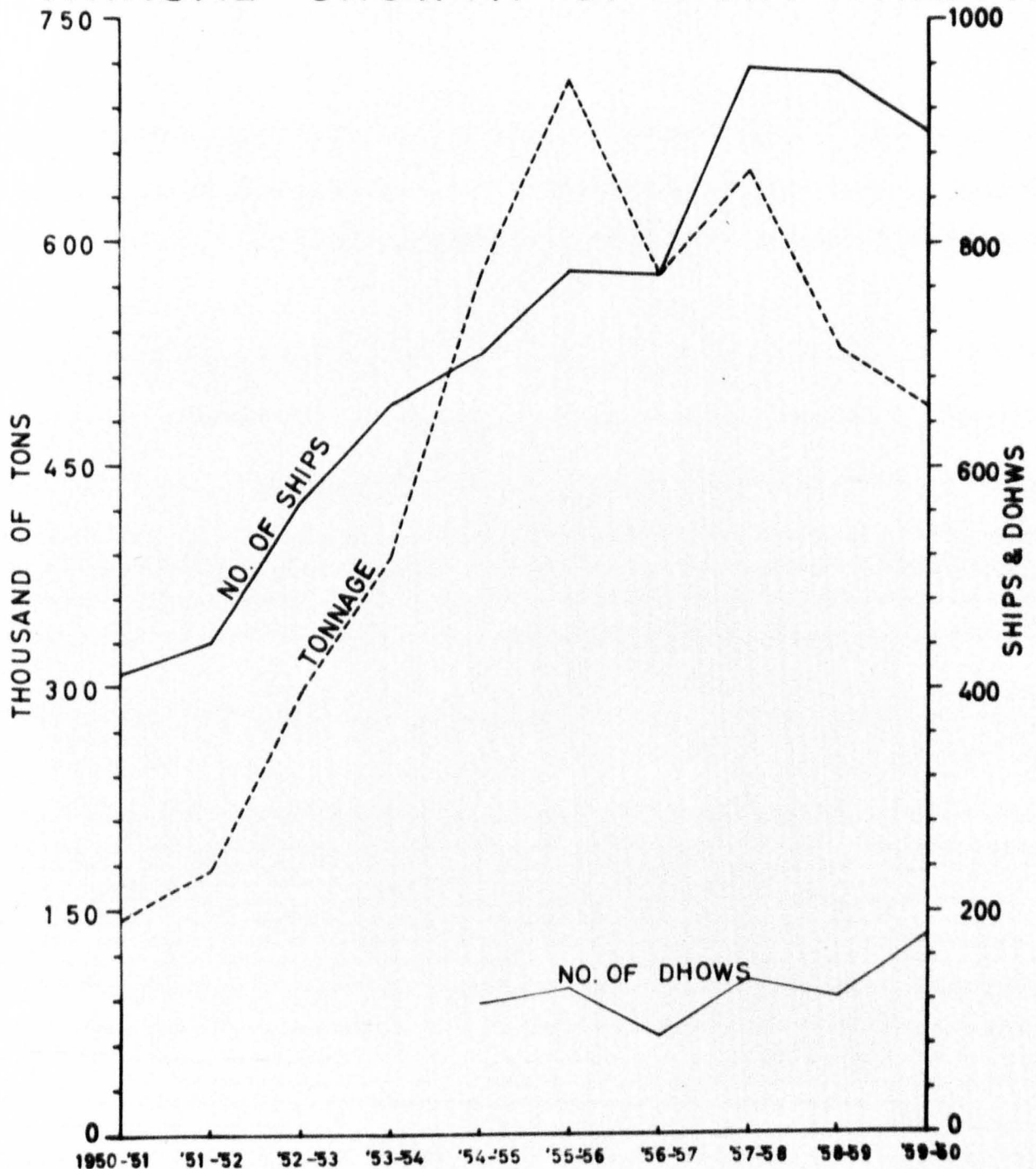
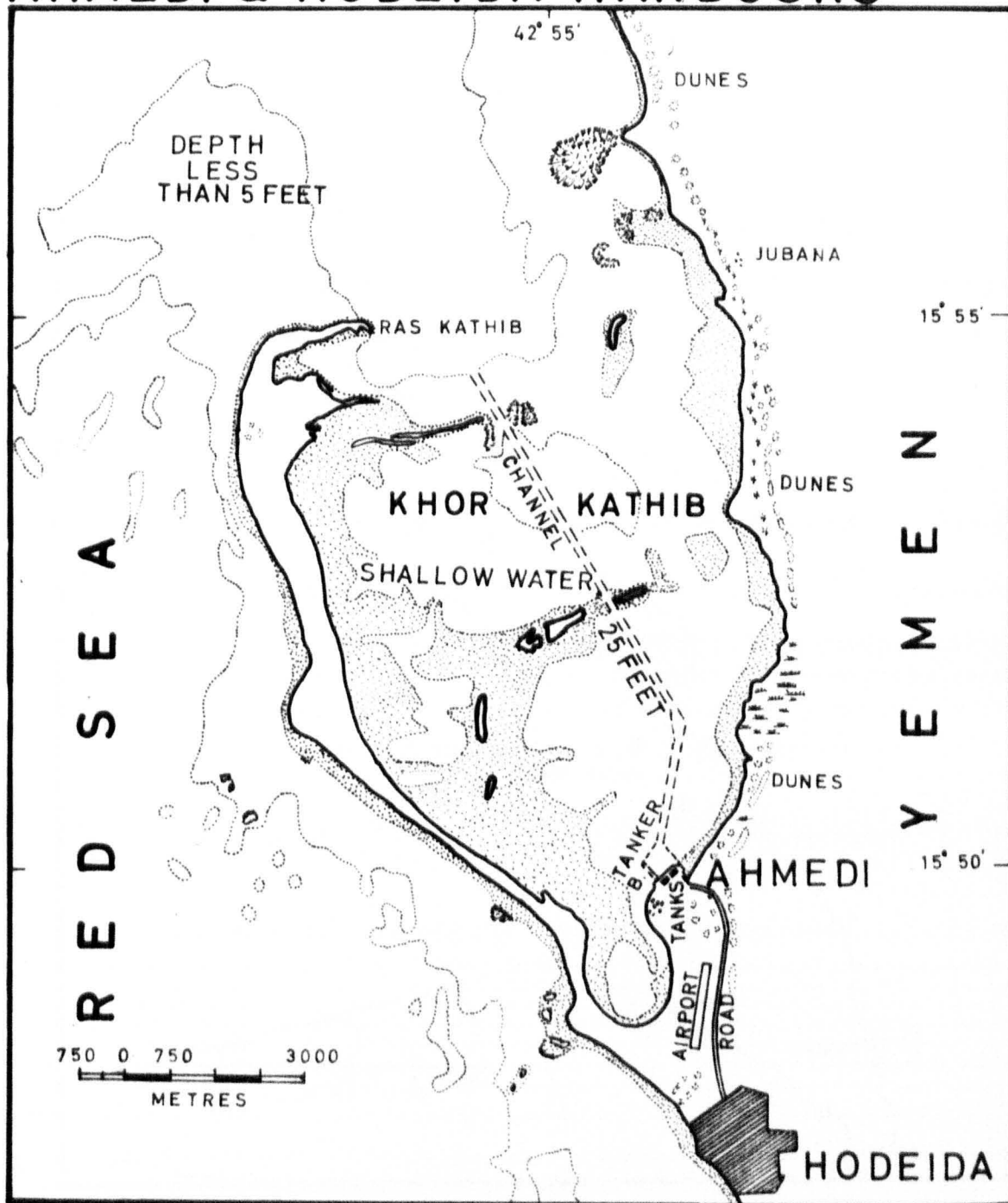


Fig. 106

AHMEDI & HODEIDA HARBOURS



SOURCE: CHART 3050 (RED SEA) 1962

Fig. 108

THE POPULATION OF THE RED SEA PORTS

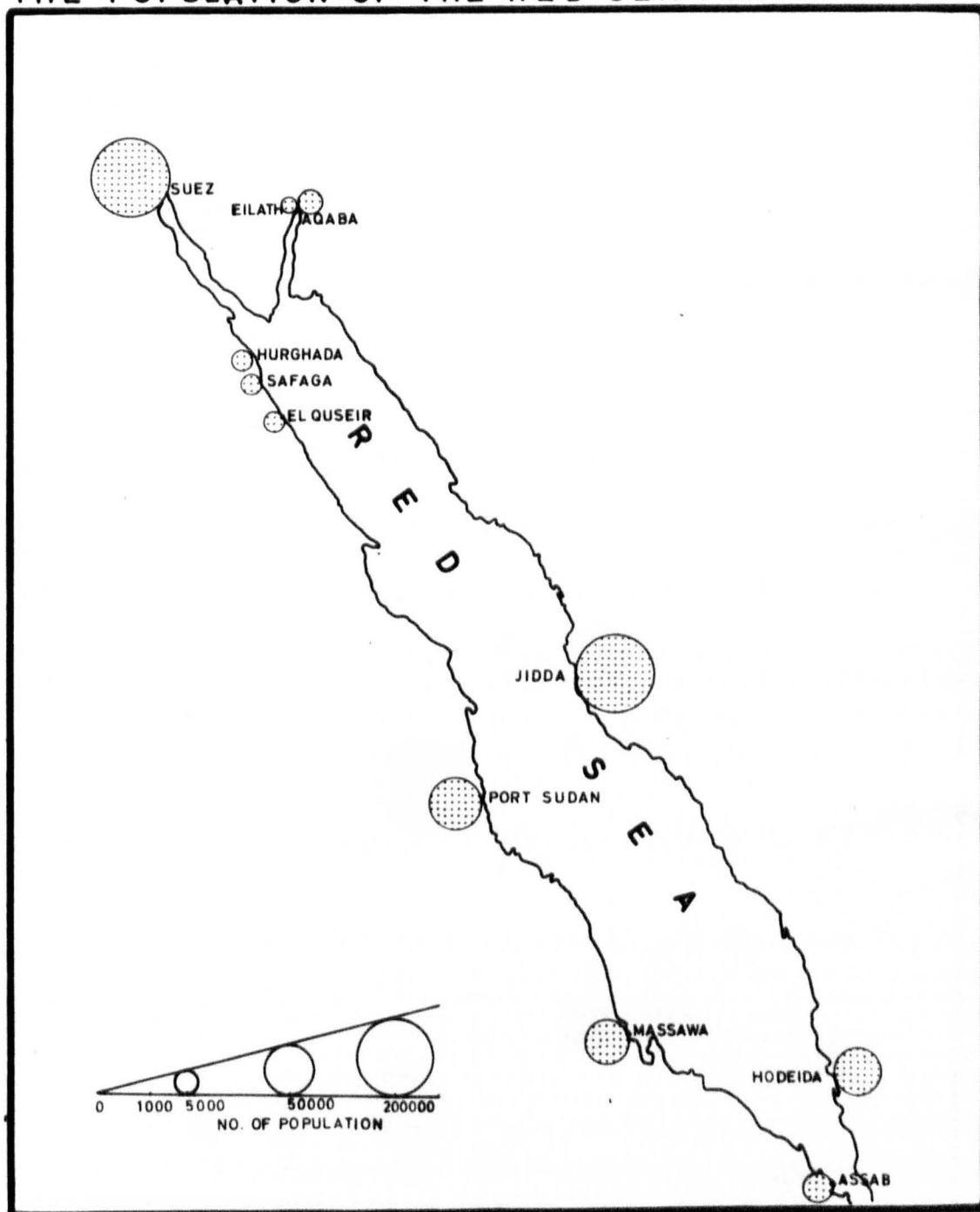


Fig. 109

THE EXTERNAL TRADE OF THE RED SEA PORTS

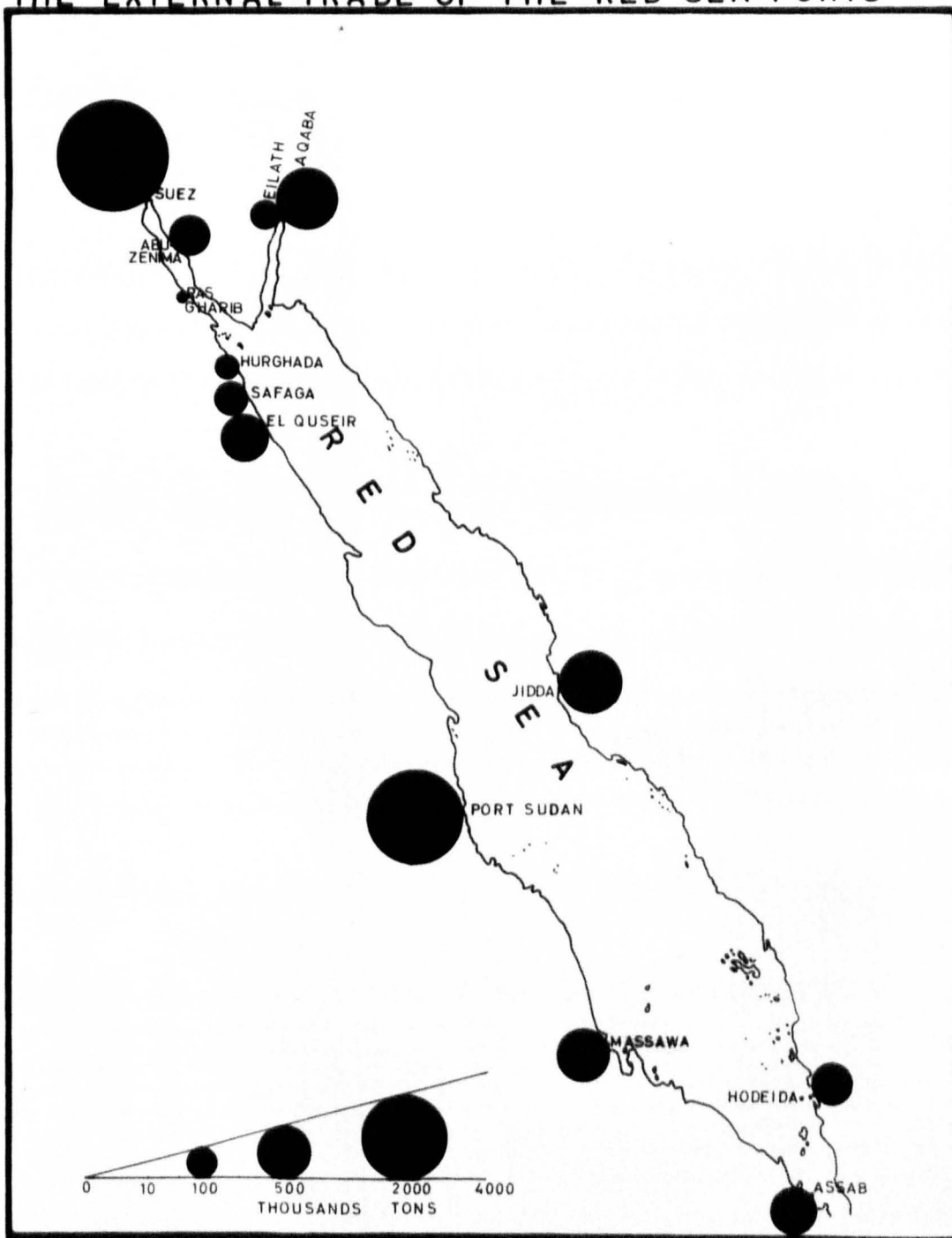
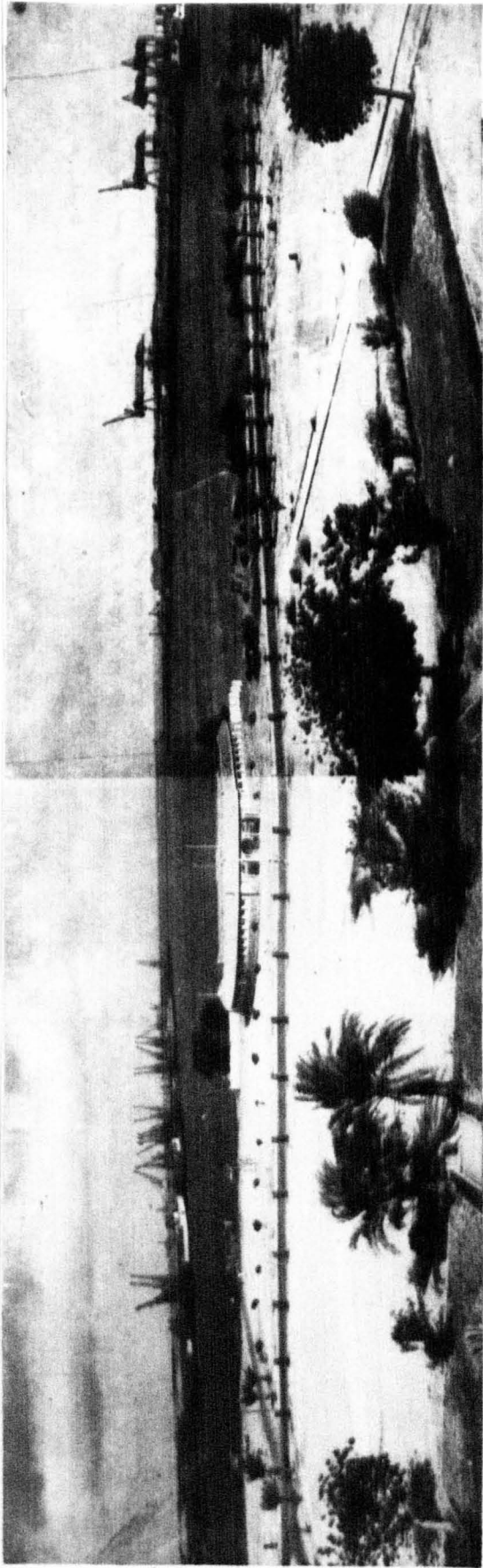
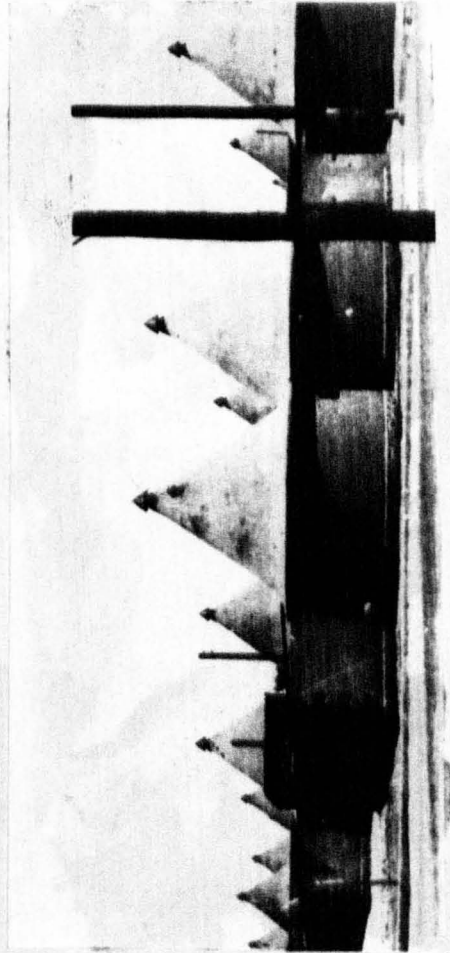


Fig. 110



(1)



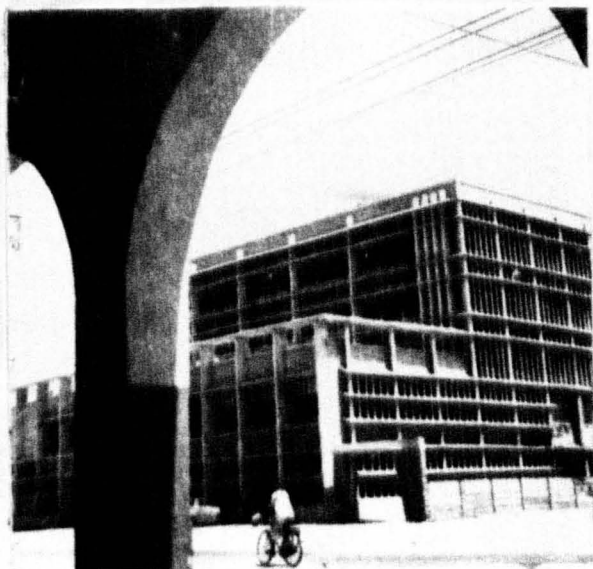
(2)



(3)



(5)



(4)



(6)



Veduta generale della Città



Il Porto

MASSAWA (ERITREA) -ETHIOPIA-



La Moschea



Il Lungomare Principe Uassan



Taulud vista dalla Diaa



Il Ghebbi Imperiale

(7)



(8)



(9)



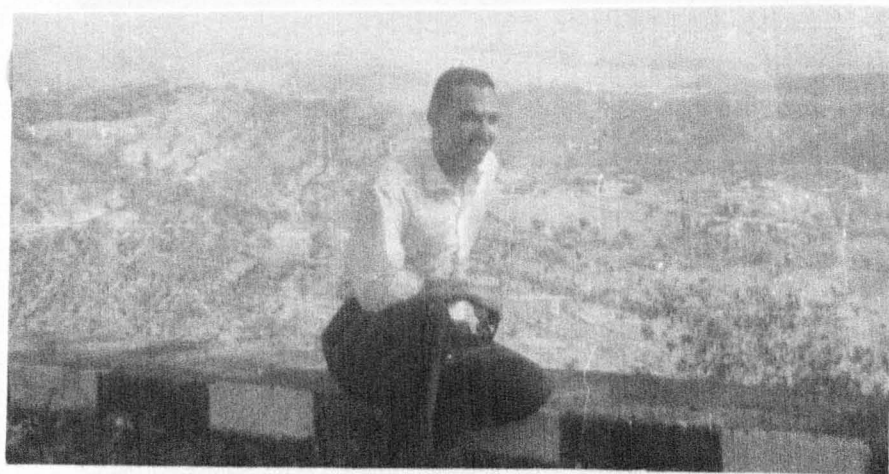
(10)



(11)



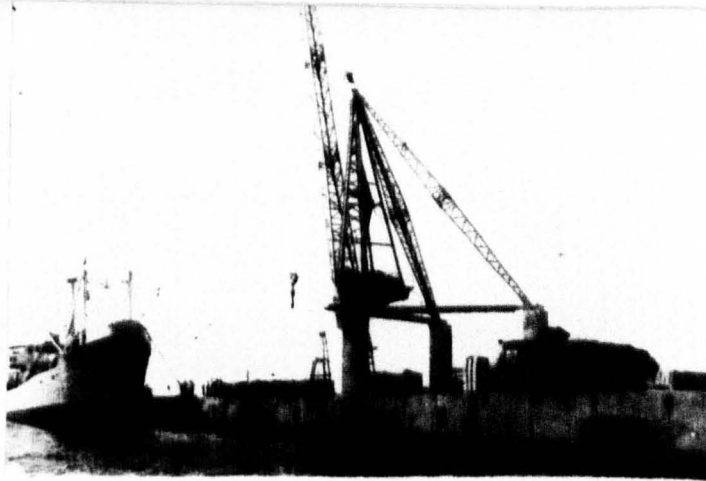
(12)



(13)



(14)



(18)

በስተደቡብ ፡ ባለው ፡ የመርከቦች ፡ መገናኛ ፡ ላይ ፡ ያለው ፡ የከባድ ፡ ስቃዎች ፡
መጨረሻ ፡ ማራገፊያ ፡ መግሪያ ።

Derrick Crane on the South Half Jetty.

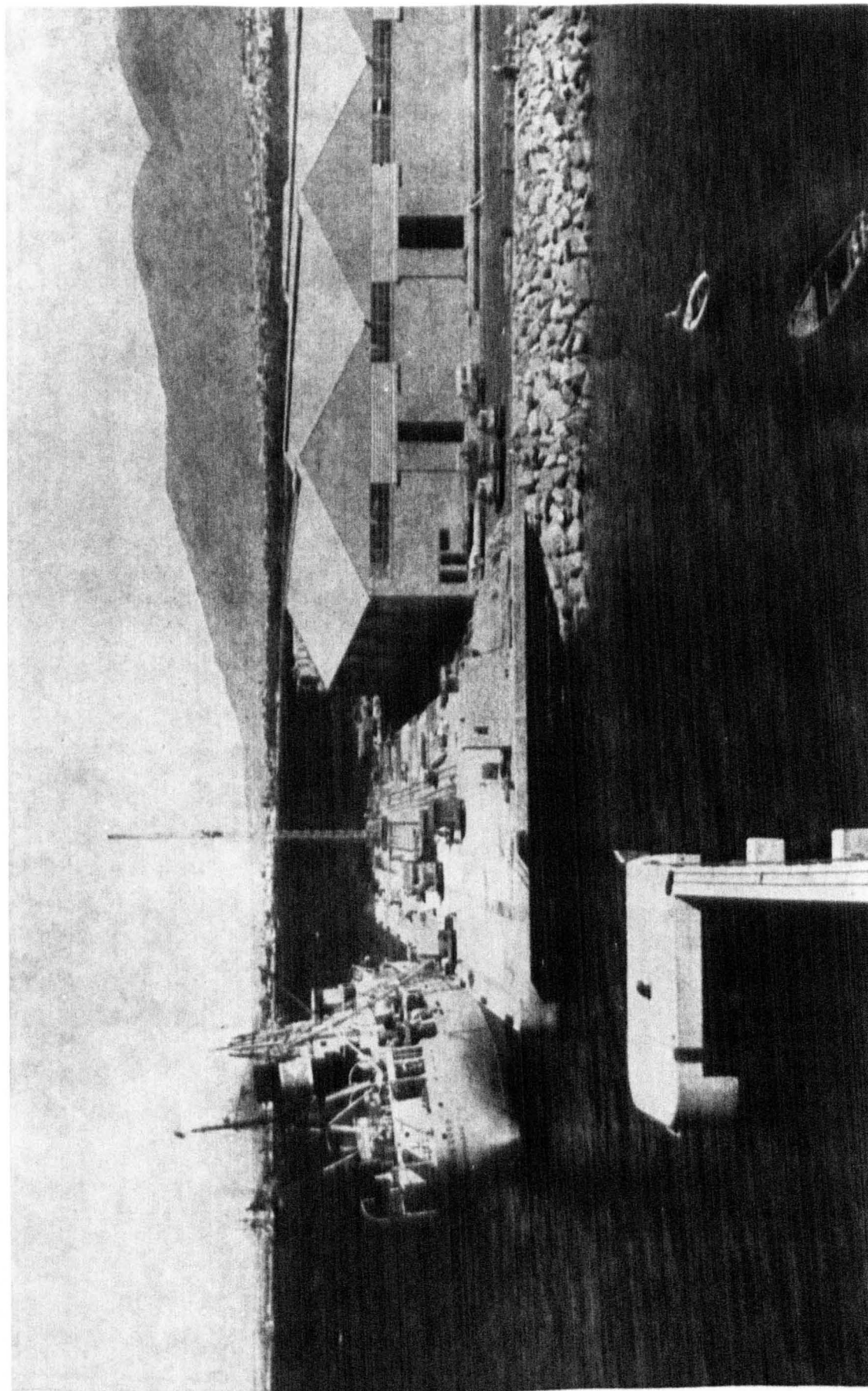


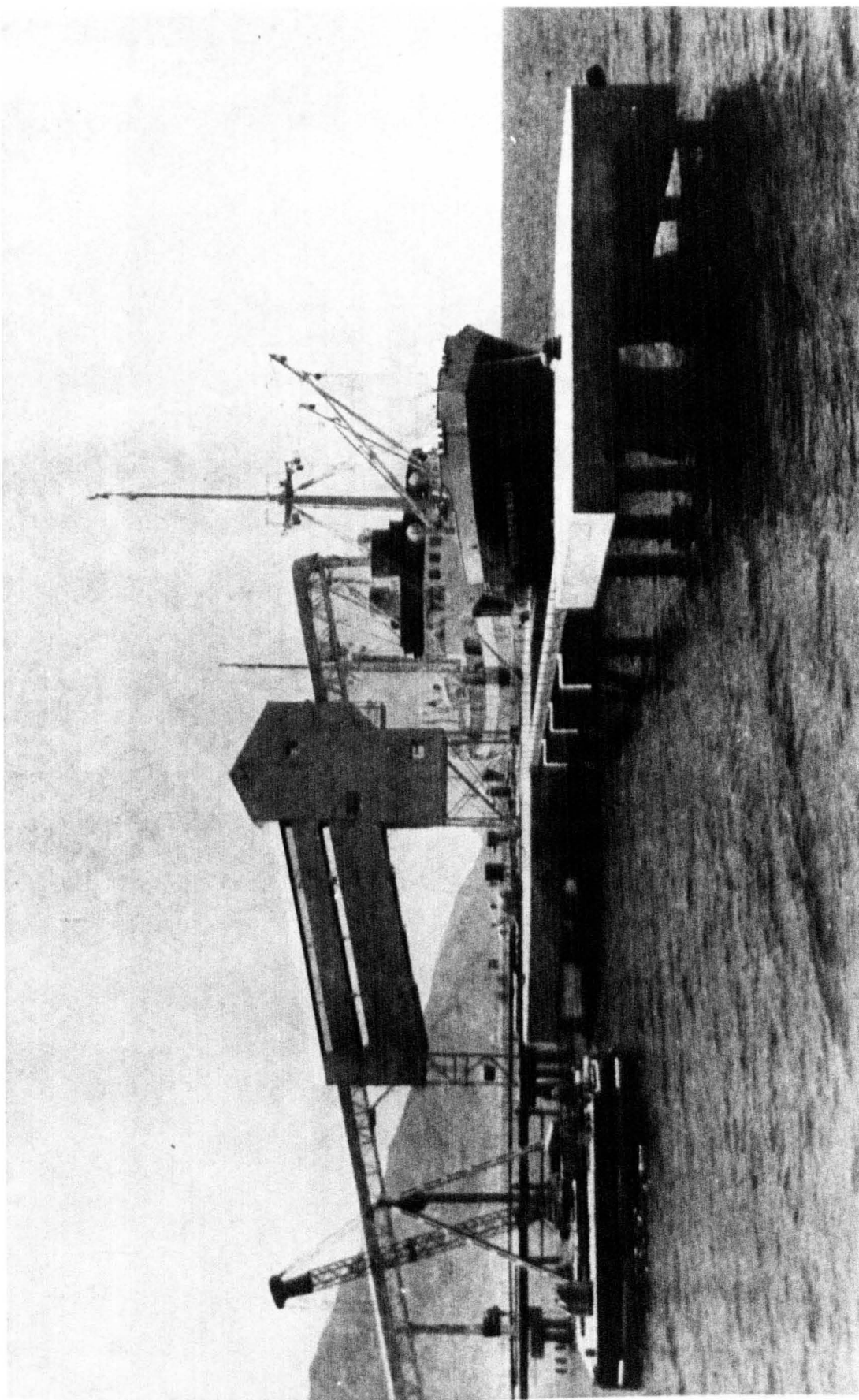
(19)

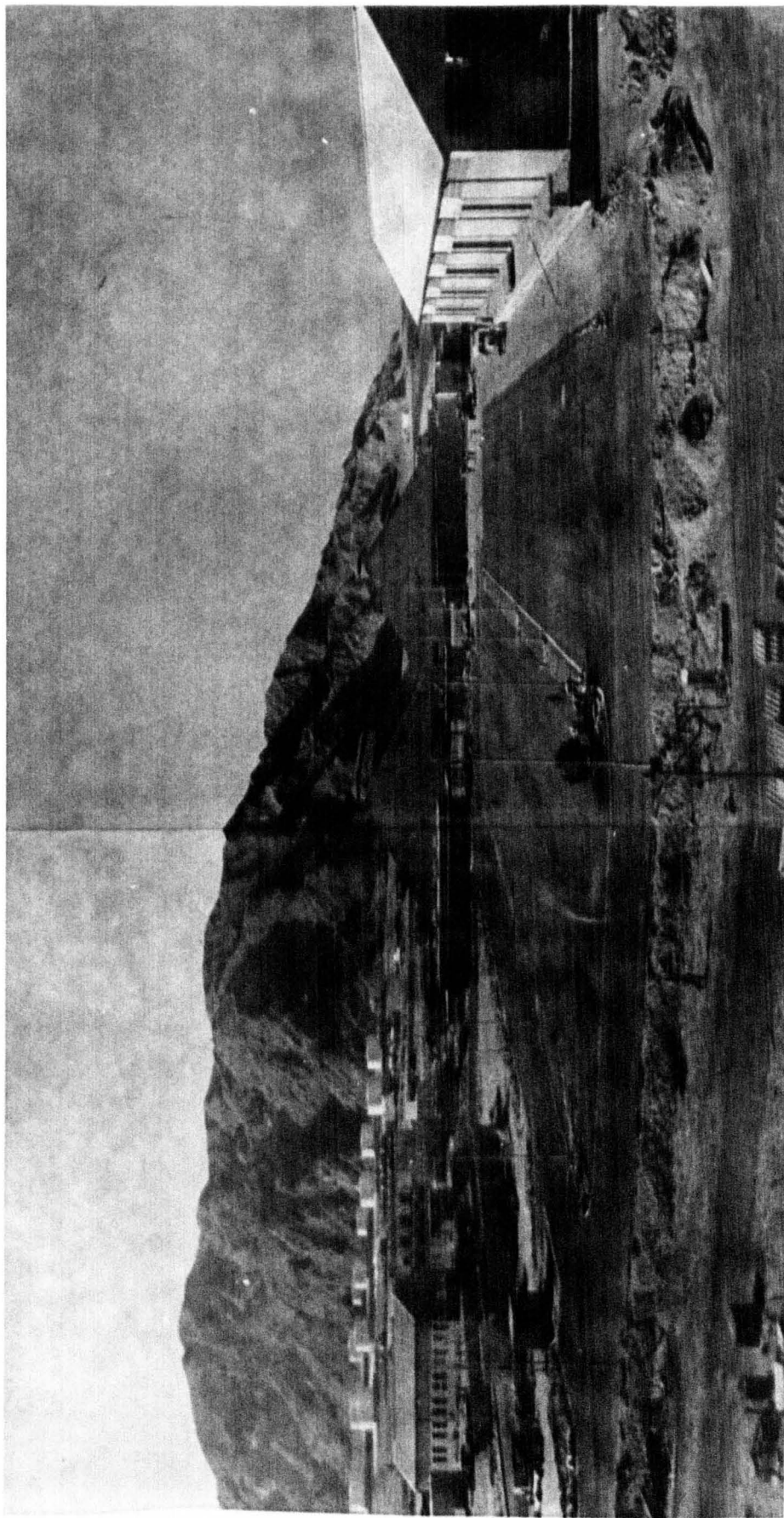
• (20)

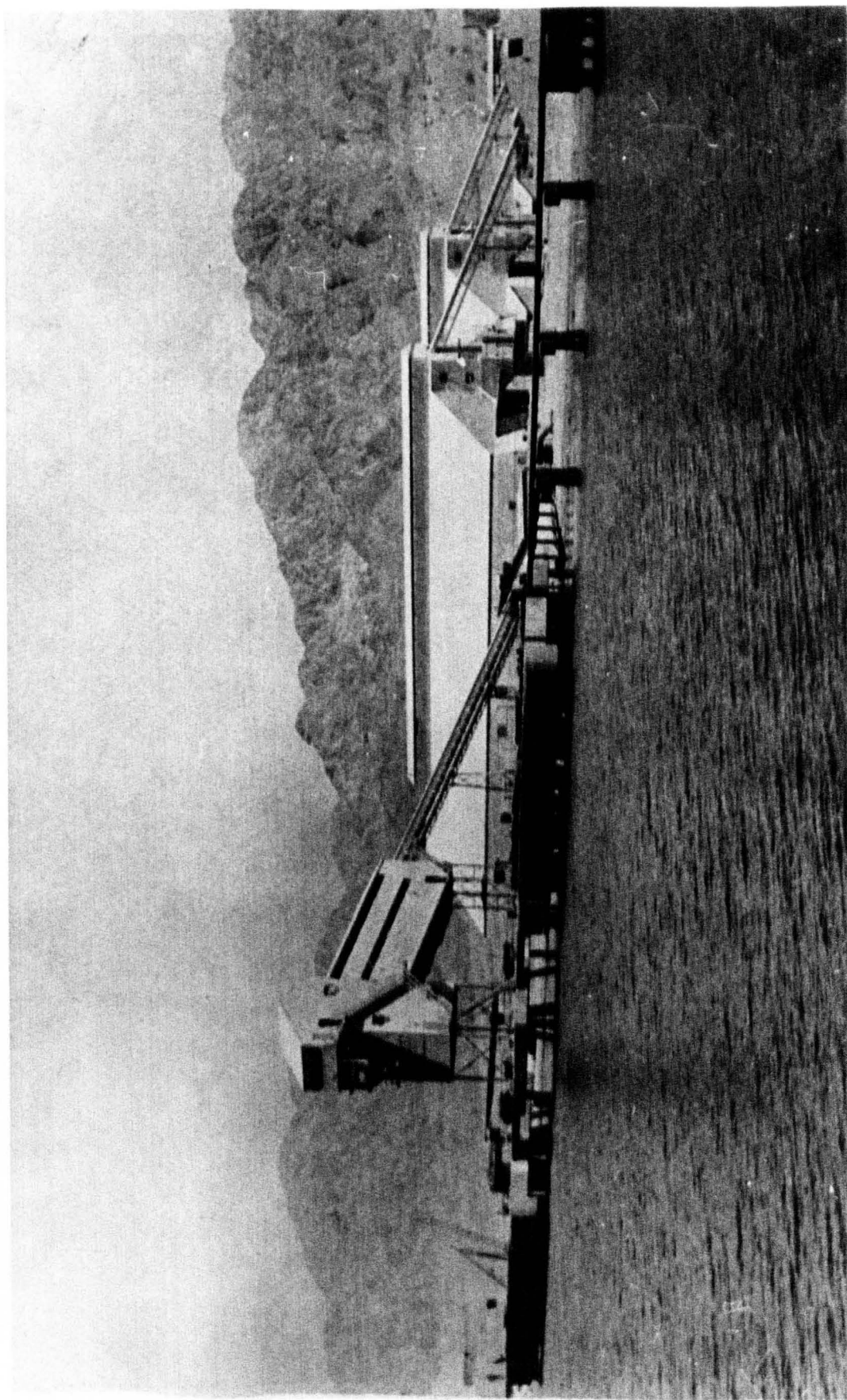


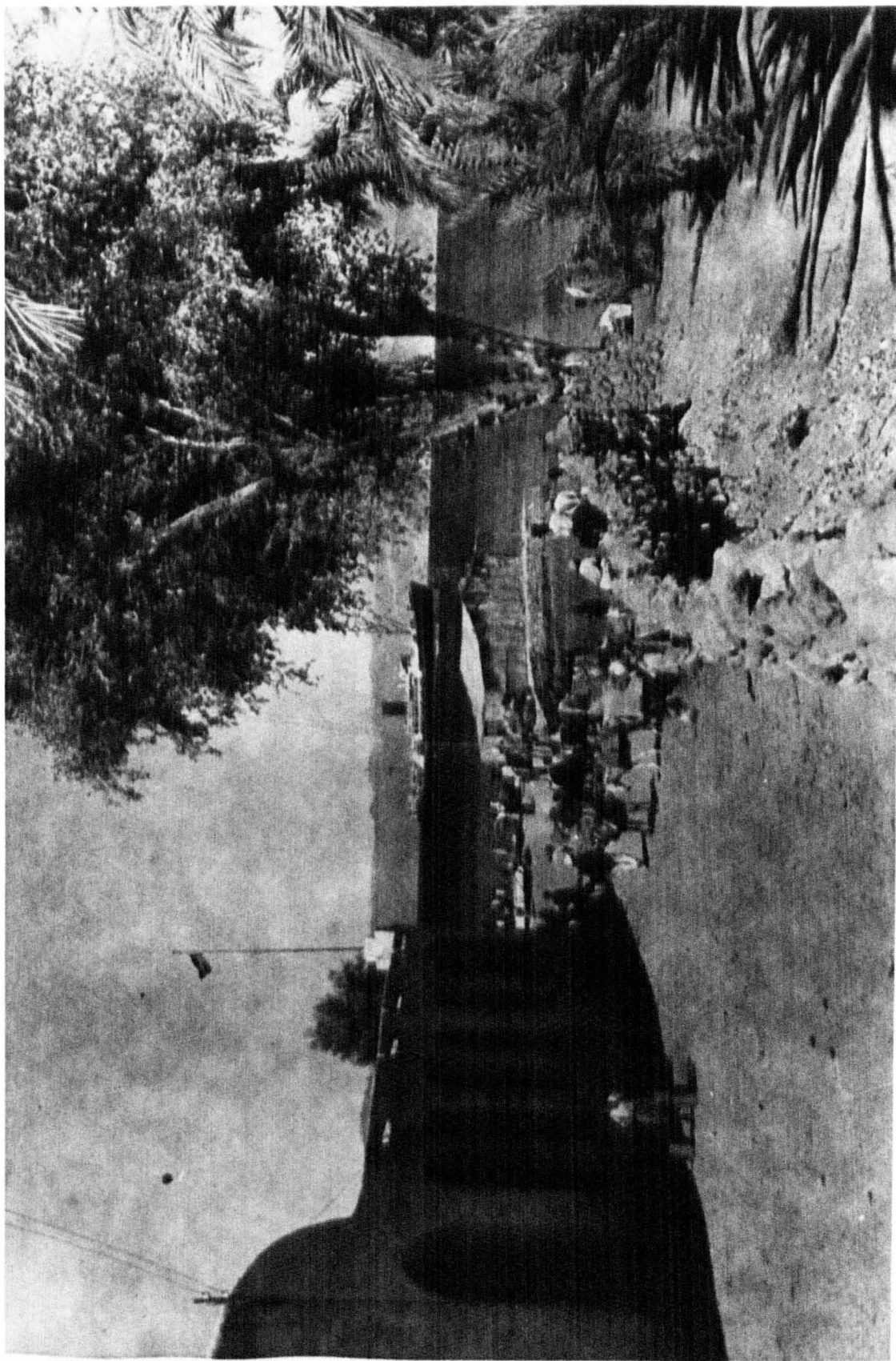
Assab salt works: closing the sacks













(26)



(27)



(28)



(29)



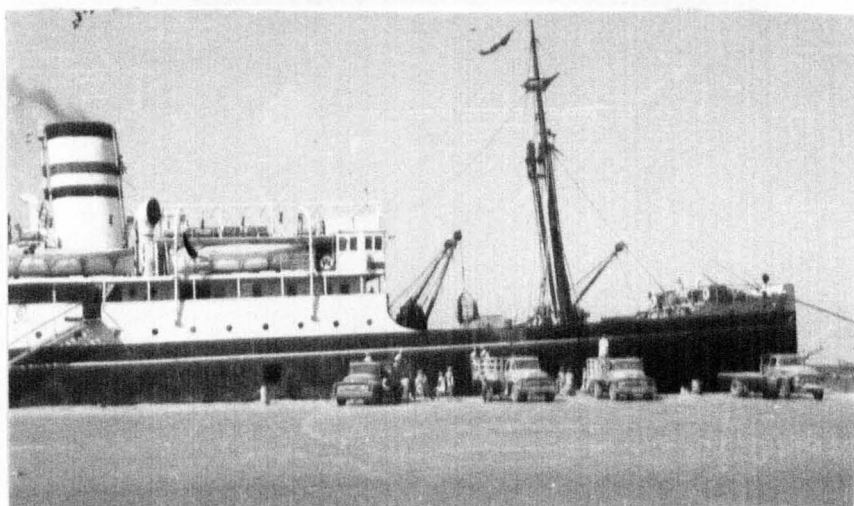
(30)



(31)



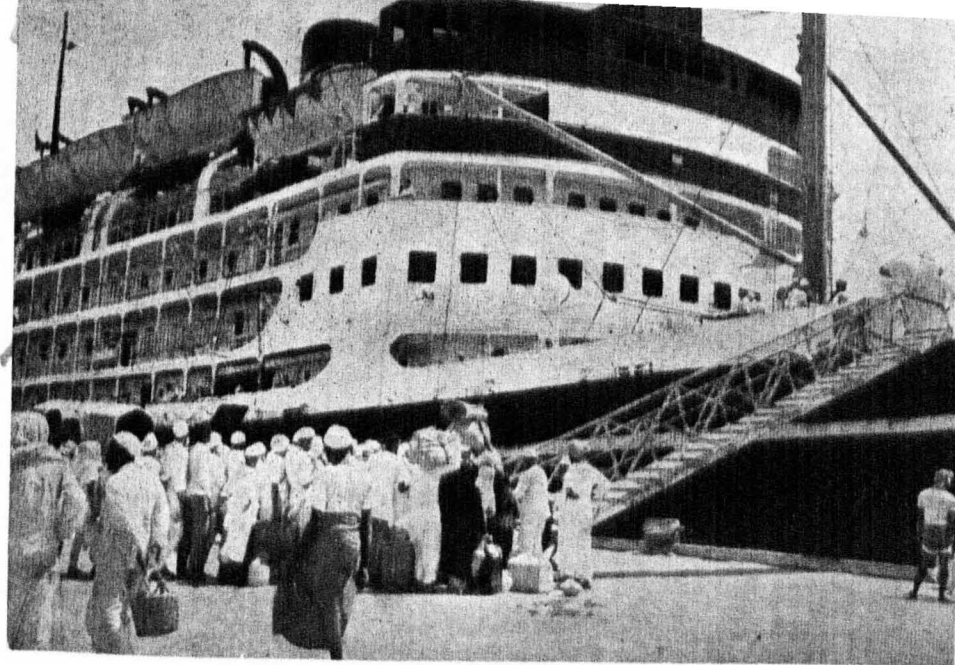
(32)



(33)



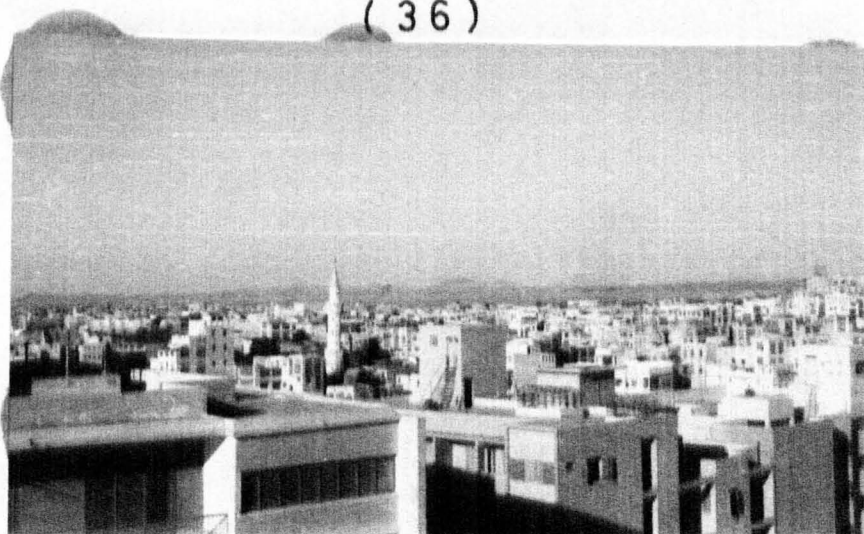
(34)



(35)



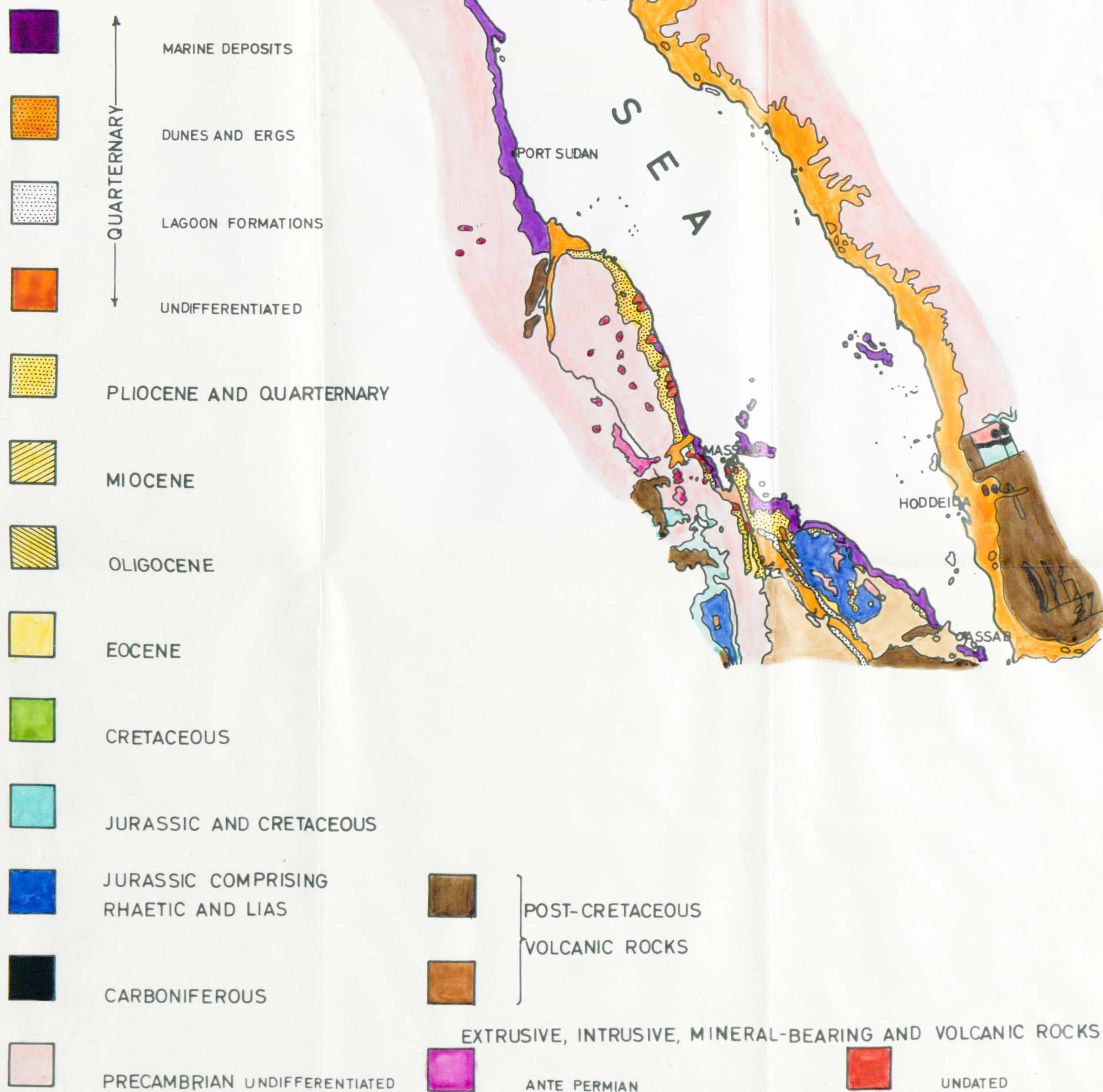
(36)



(37)

MEDITERRANEAN
SEA

GEOLOGY OF THE RED SEA BASIN



SCALE: 1:5,000,000

FIG. 1

